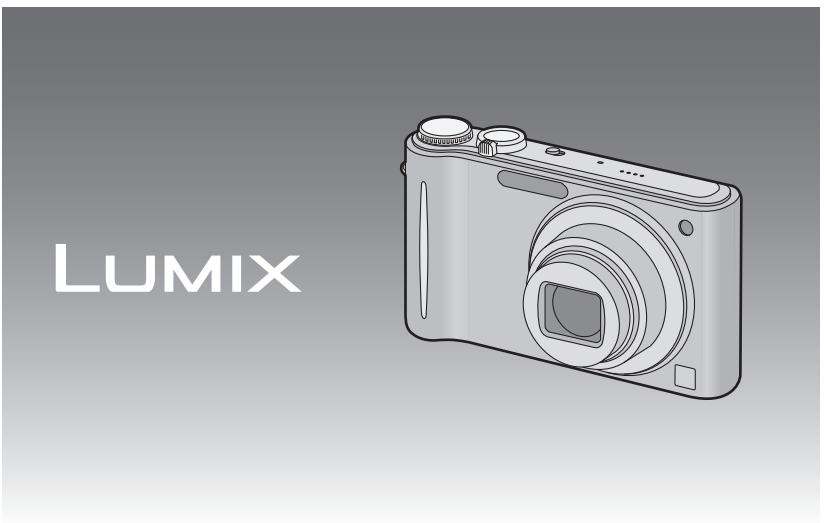
Panasonic

Operating Instructions for advanced features

Digital Camera

Model No. DMC-ZX3



Before use, please read these instructions completely.

SDXC

VQT2Q18

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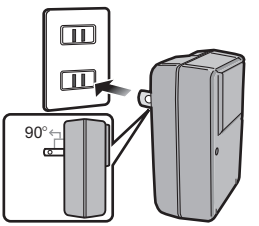
Quick Guide

This is an overview of how to record and play back pictures with the camera. For each step, be sure to refer to the pages indicated in brackets.

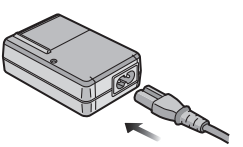
1 Charge the battery. (P9)

- **The battery is not charged when the camera is shipped. Charge the battery before use.**

plug-in type

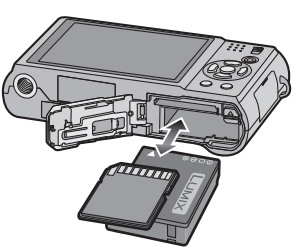


inlet type



2 Insert the battery and the card. (P14)

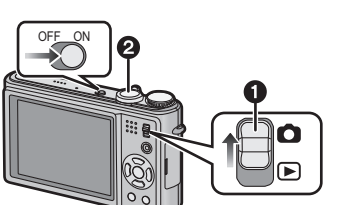
- **When you do not use the card, you can record or play back pictures on the built-in memory. (P16) Refer to P17 when you use a card.**



3 Turn the camera on to take pictures.

❶ Slide the [REC]/[PLAYBACK] selector switch to [📷].

❷ Press the shutter button to take pictures. (P33)



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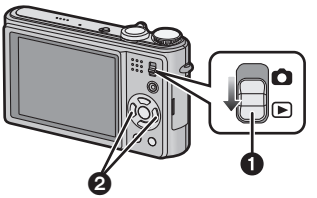
4 Play back the pictures.

❶ Slide the [REC]/[PLAYBACK] selector switch to [▶].
❷ Select the picture you want to view. (P44)



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Standard Accessories

Check that all the accessories are included before using the camera.

- The accessories and their shape will differ depending on the country or area where the camera was purchased.
  For details on the accessories, refer to Basic Operating Instructions.
- Battery Pack is indicated as **battery pack** or **battery** in the text.
- Battery Charger is indicated as **battery charger** or **charger** in the text.
- SD Memory Card, SDHC Memory Card and SDXC Memory Card are indicated as **card** in the text.
- **The card is optional.**
  You can record or play back pictures on the built-in memory when you are not using a card.
- Consult the dealer or your nearest Service Centre if you lose the supplied accessories. (You can purchase the accessories separately.)

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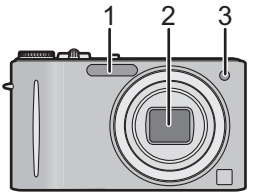
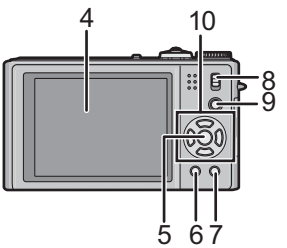
Names of the Components

1 Flash (P51)
2 Lens (P167, 168)
3 Self-timer indicator (P58)
AF Assist Lamp (P111)

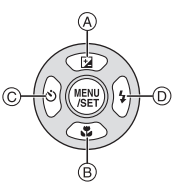


4 LCD monitor (P49, 163)
5 [MENU/SET] button (P18)
6 [DISPLAY] button (P49)
7 [Q.MENU] (P24)/Delete (P47) button
8 [REC]/[PLAYBACK] selector switch (P20)
9 Motion picture button (P33, 77)

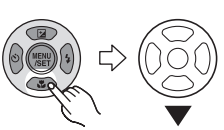


10 Cursor buttons

Ⓐ: ▲/Exposure compensation (P59)/ Auto Bracket (P60)/White Balance fine adjustment (P100)
Ⓑ: ▼/Macro Mode (P56) AF Tracking (P36, 103)
Ⓒ: ◄/Self-timer button (P58)
Ⓓ: ►/Flash setting button (P51)



In these operating instructions, the cursor buttons are described as shown in the figure below or described with ▲/▼/◄/►.
e.g.: When you press the ▼ (down) button



or **Press ▼**

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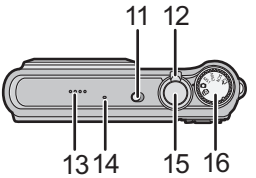
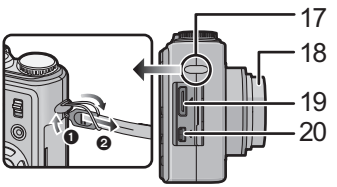
11 Camera ON/OFF switch (P18)
12 Zoom lever (P41)
13 Speaker (P125)
14 Microphone (P78, 110)
15 Shutter button (P34)
16 Mode dial (P31)



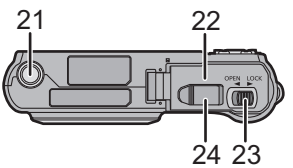
17 Hand strap eyelet
- Be sure to attach the hand strap when using the camera to ensure that you will not drop it.

18 Lens barrel
19 [HDMI] socket (P146, 148)
20 [AV OUT/DIGITAL] socket (P144, 153, 157)



21 Tripod receptacle
- When you use a tripod, make sure the tripod is stable when the camera is attached to it.

22 Card/Battery door (P14)
23 Release lever (P14)



24 DC coupler cover (P15)
- When using an AC adaptor, ensure that the Panasonic DC coupler (optional) and AC adaptor (optional) are used. For connection details, refer to P15.

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Charging the Battery

■ About batteries that you can use with this unit

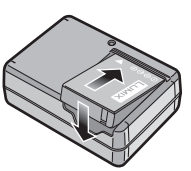
It has been found that counterfeit battery packs which look very similar to the genuine product are made available to purchase in some markets. Some of these battery packs are not adequately protected with internal protection to meet the requirements of appropriate safety standards. There is a possibility that these battery packs may lead to fire or explosion. Please be advised that we are not liable for any accident or failure occurring as a result of use of a counterfeit battery pack. To ensure that safe products are used we would recommend that a genuine Panasonic battery pack is used.

- **Use the dedicated charger and battery.**
- **The camera has a function for distinguishing batteries which can be used safely. The dedicated battery supports this function. The only batteries suitable for use with this unit are genuine Panasonic products and batteries manufactured by other companies and certified by Panasonic. (Batteries which do not support this function cannot be used). Panasonic cannot in any way guarantee the quality, performance or safety of batteries which have been manufactured by other companies and are not genuine Panasonic products.**

■ Charging

- **The battery is not charged when the camera is shipped. Charge the battery before use.**
- Charge the battery with the charger indoors.
- Charge the battery in a temperature between 10 °C to 35 °C. (The battery temperature should also be the same.)

1 Attach the battery paying attention to the direction of the battery.



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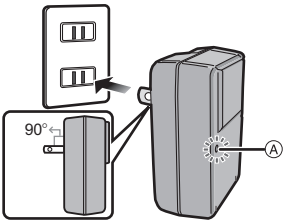
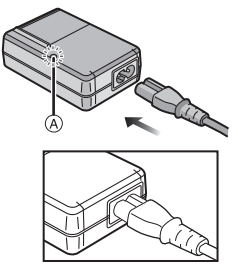
2 Connect the charger to the electrical outlet.

- The AC cable does not fit entirely into the AC input terminal. A gap will remain as shown on the right.
- Charging starts when the [CHARGE] indicator Ⓐ lights green.
- Charging is properly complete when the [CHARGE] indicator Ⓐ turns off.

plug-in type

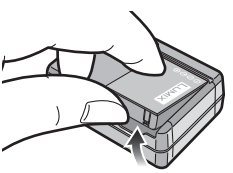


inlet type



3 Detach the battery after charging is completed.

- After charging is completed, be sure to disconnect the power supply device from the electrical outlet.



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■ Charging time

Charging time	Approx. 130 min

- **The indicated charging time is for when the battery has been discharged completely. The charging time may vary depending on how the battery has been used. The charging time for the battery in hot/cold environments or a battery that has not been used for long time may be longer than normal.**

Charging time and number of recordable pictures with the optional battery pack are the same as above.

■ When the [CHARGE] indicator flashes

- The battery temperature is too high or too low. Please charge the battery again in a temperature between 10 °C to 35 °C.
- The terminals of the charger or the battery are dirty. In this case, wipe them with a dry cloth.

■ Battery indication

The battery indication is displayed on the LCD monitor.
[It does not appear when you use the camera with the AC adaptor (optional) connected.]

- The indication turns red and blinks if the remaining battery power is exhausted. Recharge the battery or replace it with a fully charged battery.

Note

- The battery becomes warm after using it and during and after charging. The camera also becomes warm during use. This is not a malfunction.
- The battery can be recharged even when it still has some charge left, but it is not recommended that the battery charge be frequently topped up while the battery is fully charged. (Since characteristic swelling may occur.)
- **Do not leave any metal items (such as clips) near the contact areas of the power plug. Otherwise, a fire and/or electric shocks may be caused by short-circuiting or the resulting heat generated.**

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Approximate operating time and number of recordable pictures

■ **Recording still pictures**

Number of recordable pictures	**Approx. 330 pictures**	By CIPA standard in Normal Picture Mode
Recording time	**Approx. 165 min**	

Recording conditions by CIPA standard

- CIPA is an abbreviation of [Camera & Imaging Products Association].
- Temperature: 23 °C/Humidity: 50% when LCD monitor is on.
- Using a Panasonic SD Memory Card (32 MB).
- Using the supplied battery.
- Starting recording 30 seconds after the camera is turned on. (When the Optical Image Stabilizer function is set to [AUTO].)
- **Recording once every 30 seconds** with full flash every second recording.
- Rotating the zoom lever from Tele to Wide or vice versa in every recording.
- Turning the camera off every 10 recordings and leaving it until the temperature of the battery decreases.

The number of recordable pictures varies depending on the recording interval time. If the recording interval time becomes longer, the number of recordable pictures decreases. [For example, if you were to take one picture every two minutes, then the number of pictures would be reduced to approximately one-quarter of the number of pictures given above (based upon one picture taken every 30 seconds).]

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■ Playback

Playback time	Approx. 300 min

Note

- **The operating times and number of recordable pictures will differ according to the environment and the operating conditions.**
  For example, in the following cases, the operating times shorten and the number of recordable pictures is reduced.
  – In low-temperature environments, such as on ski slopes.
  – When using [AUTO POWER LCD] or [POWER LCD] (P25).
  – When operations such as flash and zoom are used repeatedly.
- When the operating time of the camera becomes extremely short even after properly charging the battery, the life of the battery may have expired. Buy a new battery.

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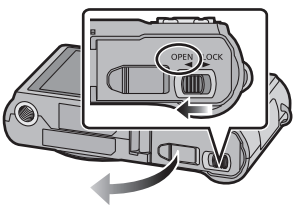
Inserting and Removing the Card (optional)/the Battery

- Check that this unit is turned off.
- We recommend using a Panasonic card.

1 **Slide the release lever in the direction of the arrow and open the card/battery door.**

- **Always use genuine Panasonic batteries.**
- **If you use other batteries, we cannot guarantee the quality of this product.**

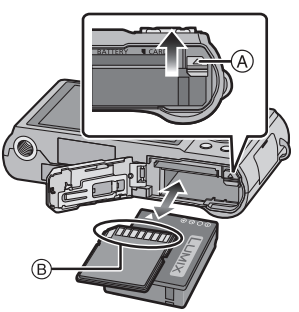


2 **Battery: Insert until it is locked by the lever Ⓐ being careful about the direction you insert it. Pull the lever Ⓐ in the direction of the arrow to remove the battery.**

Card: Push it fully until it clicks being careful about the direction you insert it. To remove the card, push the card until it clicks, then pull the card out upright.

Ⓑ: Do not touch the connection terminals of the card.

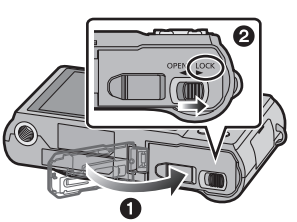
- The card may be damaged if it is not fully inserted.



3 **❶:Close the card/battery door.**

❷:Slide the release lever in the direction of the arrow.

- If the card/battery door cannot be completely closed, remove the card, check its direction and then insert it again.



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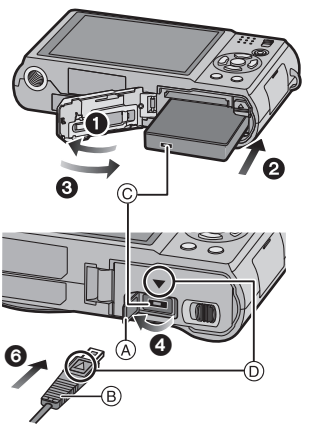
Note

- Remove the battery after use. Store the removed battery in the battery case (supplied).
- Do not remove the battery until the LCD monitor turns off as the settings on the camera may not be stored properly.
- The supplied battery is designed only for the camera. Do not use it with any other equipment.
- The battery will be exhausted if left for a long period of time after being charged.
- Turn the camera off and wait for the "LUMIX" display on the LCD monitor to clear before removing the card or battery. (Otherwise, this unit may no longer operate normally and the card itself may be damaged or the recorded pictures may be lost.)

■ Using an AC adaptor (optional) and a DC coupler (optional) instead of the battery

Ensure that the AC adaptor (optional) and DC coupler (optional) are purchased in a set. Do not use if sold separately.



1. Open the card/battery door.
2. Insert the DC coupler, being careful of the direction.
3. Close the card/battery door.
   - Ensure that the card/battery door is closed.
4. Open the DC coupler cover Ⓐ.
   - If it is difficult to open, push open the coupler cover from the interior with the card/battery door in an open state.
5. Plug the AC adaptor into an electrical outlet.
6. Connect the AC adaptor Ⓑ to the [DC IN] socket Ⓒ of the DC coupler.

Ⓓ Align the marks and insert.

- Ensure that only the AC adaptor and DC coupler for this camera are used. Using any other equipment may cause damage.

Note

- Always use a genuine Panasonic AC adaptor (optional).
- When using an AC adaptor, use the AC cable supplied with the AC adaptor.
- Some tripods cannot be attached when the DC coupler is connected.
- This unit cannot be stood upright when the AC adaptor is connected. When placing it down and operating, we recommend placing it on a soft cloth.
- Make sure to unplug the AC adaptor when you open the card/battery door.
- If the AC adaptor and DC coupler are not necessary, then remove them from the digital camera. Also, please keep the DC coupler cover closed.
- Also read the operating instructions for the AC adaptor and DC coupler.
- We recommend you use a battery with sufficient battery power or the AC adaptor when recording motion pictures.
- If while recording motion pictures using the AC adaptor the power supply is cut off due to a power cut or if the AC adaptor is disconnected etc., the motion picture being recorded will not be recorded.

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About the Built-in Memory/the Card

The following operations can be performed using this unit.

- **When a card has not been inserted: Pictures can be recorded on the built-in memory and played back.**
- **When a card has been inserted: Pictures can be recorded on the card and played back.**
- Clipboard pictures (P113) are stored on the built-in memory even if a card is inserted.
- **When using the built-in memory**
  IN→IN (**access indication**✳)
- **When using the card**
  (**access indication**✳)

✳ The access indication lights red when pictures are being recorded on the built-in memory (or the card).

Built-in Memory

- **You can copy the recorded pictures to a card. (P143)**
- **Memory size: Approx. 40 MB**
- **Recordable motion pictures: QVGA (320×240 pixels) only**
- The built-in memory can be used as a temporary storage device when the card being used becomes full.
- The access time for the built-in memory may be longer than the access time for a card.

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Card

The following cards which conform to the SD video standard can be used with this unit. (These cards are indicated as **card** in the text.)

Type of card which can be used with this unit	Remarks
SD Memory Card (8 MB to 2 GB)	• SDHC Memory Cards and SDXC Memory Cards can be used only in equipment that is compatible with their respective formats. • Check that the PC and other equipment are compatible when using the SDXC Memory Cards. **http://panasonic.net/avc/sdcard/information/SDXC.html**
SDHC Memory Card (4 GB to 32 GB)	
SDXC Memory Card (48 GB to 64 GB)	

- Only cards bearing the SDHC logo (indicating that the card conforms to SD video standards) may be used as 4 GB to 32 GB cards.
- Only cards bearing the SDXC logo (indicating that the card conforms to SD video standards) may be used as 48 GB to 64 GB cards
- Use a card with SD Speed Class＊ with “Class 4” or higher when recording motion pictures in [AVCHD Lite]. Also, use a card with SD Speed Class with “Class 6” or higher when recording motion pictures in [MOTION JPEG].
  ＊ SD Speed Class is the speed standard regarding continuous writing.
- Please confirm the latest information on the following website.
  http://panasonic.jp/support/global/cs/dsc/
  (This Site is English only.)

Note

- **Do not turn this unit off, remove its battery or card, or disconnect the AC adaptor (optional) when the access indication is lit [when pictures are being written, read or deleted, or the built-in memory or the card is being formatted (P30)]. Furthermore, do not subject the camera to vibration, impact or static electricity.**
  The card or the data on the card may be damaged, and this unit may no longer operate normally.
  If operation fails due to vibration, impact or static electricity, perform the operation again.
- Write-Protect switch Ⓐ provided (When this switch is set to the [LOCK] position, no further data writing, deletion or formatting is possible. The ability to write, delete and format data is restored when the switch is returned to its original position.)
- The data on the built-in memory or the card may be damaged or lost due to electromagnetic waves, static electricity or breakdown of the camera or the card. We recommend storing important data on a PC etc.
- Do not format the card on your PC or other equipment. Format it on the camera only to ensure proper operation. (P30)
- Keep the Memory Card out of reach of children to prevent swallowing.

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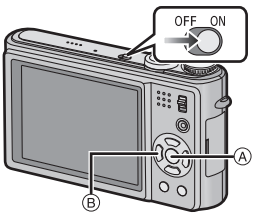
Setting Date/Time (Clock Set)

• The clock is not set when the camera is shipped.

1 Turn the camera on.

Ⓐ [MENU/SET] button
Ⓑ Cursor buttons
• If the language select screen is not displayed, proceed to step **4**.



2 Press [MENU/SET].

3 Press ▲/▼ to select the language, and press [MENU/SET].

• The [PLEASE SET THE CLOCK] message appears. (This message does not appear in [PLAYBACK] Mode.)

4 Press [MENU/SET].

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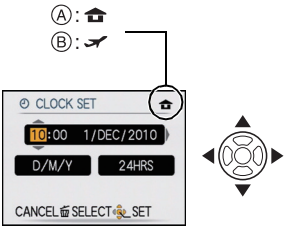
5 Press ◄/► to select the items (year, month, day, hour, minute, display sequence or time display format), and press ▲/▼ to set.



Ⓐ: Time at the home area
Ⓑ: Time at the travel destination (P93)
🗑: Cancel without setting the clock.
- Select either [24HRS] or [AM/PM] for the time display format.
- AM/PM is displayed when [AM/PM] is selected.
- When [AM/PM] is selected as the time display format, midnight is displayed as AM 12:00 and noon is displayed as PM 12:00. This display format is common in the US and elsewhere.

6 Press [MENU/SET] to set.

7 Press [MENU/SET].

- Press [🗑] to return to the settings screen.
- After completing the clock settings, turn the camera off. Then turn the camera back on, switch to Recording Mode, and check that the display reflects the settings that were performed.
- When [MENU/SET] has been pressed to complete the settings without the clock having been set, set the clock correctly by following the “Changing the Clock Setting” procedure below.

Changing the Clock Setting

Select [CLOCK SET] in the [REC] or [SETUP] menu, and press ►. (P22)
- It can be changed in steps **5**, **6** and **7** to set the clock.
- **The clock setting is maintained for 3 months using the built-in clock battery even without the battery. (Leave the charged battery in the unit for 24 hours to charge the built-in battery.)**

Note
- The clock is displayed when [DISPLAY] is pressed several times during recording.
- You can set the year from 2000 to 2099.
- If the clock is not set, the correct date cannot be printed when you stamp the date on the pictures with [TEXT STAMP] (P131) or order a photo studio to print the pictures.
- If the clock is set, the correct date can be printed even if the date is not displayed on the screen of the camera.

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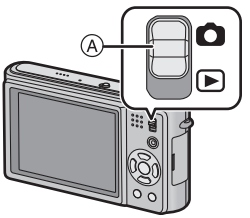
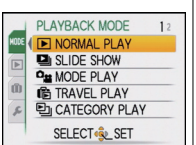
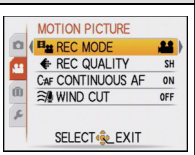
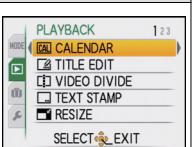
Setting the Menu

The camera comes with menus that allow you to choose the settings for taking pictures and playing them back as you like and menus that enable you to have more fun with the camera and use it more easily.
In particular, the [SETUP] menu contains some important settings relating to the camera's clock and power. Check the settings of this menu before proceeding to use the camera.

Ⓐ [REC]/[PLAYBACK] selector switch



[REC] Mode menu (P95 to 111)	[MODE] Playback Mode menu (P44, 118 to 124)
• This menu lets you set the Colouring, Sensitivity, Aspect Ratio, Number of pixels and other aspects of the pictures you are recording.	• This menu lets you select the setting of the playback methods such as Playback or Slide Show of only the pictures set as [FAVORITE]. 
[MOTION PICTURE] Mode menu (P112)	**[PLAYBACK] Mode menu (P128 to 143)**
• This menu lets you set the [REC MODE], [REC QUALITY], and other aspects for motion picture recording. 	• This menu lets you set the Protection, Cropping or Print Settings, etc. of recorded pictures. 

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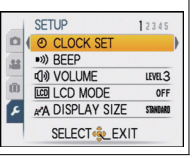
[TRAVEL MODE] menu (P91 to 94)

- You can set the departure date and destination when travelling, and have the camera display the local date and time.
- The [TRAVEL MODE] menu can be set from either the [REC] Mode or [PLAYBACK] Mode.

[SETUP] menu (P25 to 30)

- This menu lets you perform the clock settings, select the operating beep tone settings and set other settings which make it easier for you to operate the camera.
- The [SETUP] menu can be set from either the [REC] Mode or [PLAYBACK] Mode.



Note

- Due to the camera's specifications, it may not be possible to set some of the functions or some functions may not work in some of the conditions under which the camera is used.

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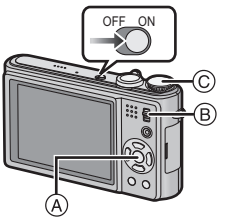
Setting menu items

This section describes how to select the Normal Picture Mode settings, and the same setting can be used for the [PLAYBACK] menu and [SETUP] menu as well.
Example: Setting [AF MODE] from [▣] to [👤] in the Normal Picture Mode

1 **Turn the camera on.**

Ⓐ [MENU/SET] button
Ⓑ [REC]/[PLAYBACK] selector switch
Ⓒ Mode dial



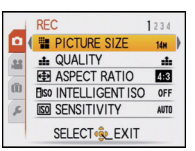
2 **Slide the [REC]/[PLAYBACK] selector switch to [📷].**

- When selecting the [PLAYBACK] Mode menu settings, set the [REC]/[PLAYBACK] selector switch to [▶], and proceed to step **4**.

3 **Set the Mode dial to [📷].**

4 **Press [MENU/SET] to display the menu.**

- You can switch menu screens from any menu item by rotating the zoom lever.

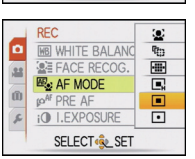


5 **Press ▲/▼ to select [AF MODE].**

- Select the item at the very bottom, and press ▼ to move to the second screen.

6 **Press ►.**

- Depending on the item, its setting may not appear or it may be displayed in a different way.



7 **Press ▲/▼ to select [👤].**

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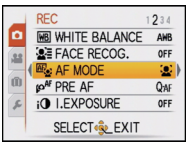
8 **Press [MENU/SET] to set.**

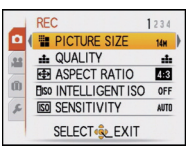


9 **Press [MENU/SET] to close the menu.**

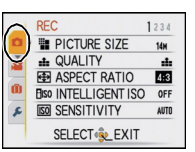
Switching to other menus

e.g.: Switching to the [SETUP] menu

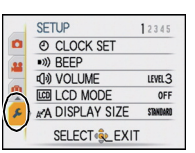
1 **Press [MENU/SET] to display the menu.**



2 **Press ◄.**

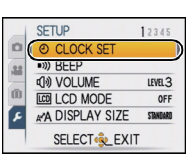


3 **Press ▼ to select the [SETUP] menu icon [🔧].**



4 **Press ►.**

- Select a menu item next and set it.



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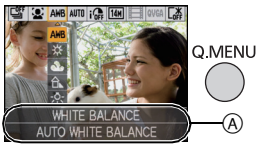
Using the Quick Menu

By using the Quick Menu, some of the menu settings can be easily found.
• Some of the menu items cannot be set by the modes.



1 Press and hold [Q.MENU] when recording.

2 Press ▲/▼/◄/► to select the menu item and the setting and then press [MENU/SET] to close the menu.

Ⓐ The items to be set and the settings are displayed.

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Perform these settings if you need to.

About the Setup Menu

[CLOCK SET], [ECONOMY] and [AUTO REVIEW] are important items. Check their settings before using them.

- In the Intelligent Auto Mode, only [CLOCK SET], [BEEP], [LANGUAGE] and [STABILIZER DEMO.] (P30) can be set.

For details on how to select the [SETUP] menu settings, refer to P22.

[CLOCK SET]	Setting Date/Time.

- Refer to P18 for details.

[BEEP]	This allows you to set the beep and shutter sound.	
	[BEEP LEVEL]: **[ ] (Muted)** **[ ] (Low)** **[ ] (High)**	**[SHUTTER VOL.]:** **[ ] (Muted)** **[ ] (Low)** **[ ] (High)**
	[BEEP TONE]: **[ ]/[ ]/[ ]**	**[SHUTTER TONE]:** **[ ]/[ ]/[ ]**

[VOLUME]	Adjust the volume of the speaker to any of 7 levels.

- When you connect the camera to a TV, the volume of the TV speakers does not change.

[LCD MODE]	These menu settings make it easier to see the LCD monitor when you are in bright places.
	[OFF] **[AUTO POWER LCD]:** The brightness is adjusted automatically depending on how bright it is around the camera. **[POWER LCD]:** The LCD monitor becomes brighter and easier to see even when taking pictures outdoors.

- The brightness of the pictures displayed on the LCD monitor is increased so some subjects may appear different from real life on the LCD monitor. However, this does not affect the recorded pictures.
- The LCD monitor automatically returns to normal brightness after 30 seconds when recording in Power LCD Mode. Press any button to make the LCD monitor bright again.
- If the screen is difficult to see because of bright light shining on it, use your hand or another object to block the light.
- The number of recordable pictures decreases in Auto Power LCD Mode and Power LCD Mode.
- [AUTO POWER LCD] cannot be selected in Playback Mode.

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[DISPLAY SIZE]	Change the display size of some icons and menu screens.
	[STANDARD]/[LARGE]

[GUIDE LINE]	Set the pattern of the guidelines displayed when taking pictures. You can also set whether or not to have the recording information displayed when the guidelines are displayed. (P49)	
	[REC. INFO.]: **[OFF]/[ON]**	**[PATTERN]:** **[ ]/[ ]**

• The [PATTERN] setting is fixed to [ ] in the Intelligent Auto Mode and the Clipboard Mode.

[HISTOGRAM]	This allows you to set either to display or not display the histogram. (P50)
	[OFF]/[ON]

[REC AREA]	Angle of view for motion picture recording can be checked.
	[OFF]/[ON]

• Motion picture recording frame display is only an approximation.
• Recording frame display may disappear when zooming to Tele depending on the picture size setting.
• This cannot be used during Intelligent Auto Mode.

ECO **[ECONOMY]**	You can conserve the battery life by setting these menus. Also, the battery life is conserved by dimming the LCD monitor.
	[SLEEP MODE]: The camera is automatically turned off if the camera has not been used for the time selected on the setting. **[OFF]/[2MIN.]/[5MIN.]/[10MIN.]**
	[LCD POWER SAVE]: Brightness of the LCD monitor is lowered. The battery life will be conserved by lowering the image quality of the LCD monitor further during the recording*. * Excluding the Digital Zoom range. **[OFF]/[ON]**

• Press the shutter button halfway or turn the camera off and on to cancel [SLEEP MODE].
• [SLEEP MODE] is set to [5MIN.] in the Intelligent Auto Mode and the Clipboard Mode.
• [SLEEP MODE] does not work in the following cases.
– When using the AC adaptor
– When connecting to a PC or a printer
– When recording or playing back motion pictures
– During a slide show
– [AUTO DEMO]
• The effect of the [LCD POWER SAVE] is lower in the Digital Zoom range compared to the Optical Zoom range.
• The effect of the [LCD POWER SAVE] will not affect the image being recorded.
• Setting of [LCD MODE] has priority over the setting of [LCD POWER SAVE] regarding the brightness of the LCD monitor.

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[AUTO REVIEW]	Set the length of time that the picture is displayed after taking it.
	[OFF] **[1SEC.]** **[2SEC.]** **[HOLD]:** The pictures are displayed until one of the buttons is pressed.

- The Auto Review function is activated regardless of its setting when using Auto Bracket (P60), [SELF PORTRAIT] (P64), [HI-SPEED BURST] (P70), [FLASH BURST] (P71) and [PHOTO FRAME] (P75) in Scene Mode, Burst Mode (P106) and when recording still pictures with audio (P110).
- In Intelligent Auto Mode, the Auto Review function is fixed to [2SEC.].
- [AUTO REVIEW] does not work when recording motion pictures.

[NO.RESET]	Reset the file number of the next recording to 0001.

- The folder number is updated and the file number starts from 0001. (P156)
- A folder number between 100 and 999 can be assigned.
  When the folder number reaches 999, the number cannot be reset. We recommend formatting the card (P30) after saving the data on a PC or elsewhere.
- To reset the folder number to 100, format the built-in memory or the card first and then use this function to reset the file number.
  A reset screen for the folder number will then appear. Select [YES] to reset the folder number.

[RESET]	The [REC] or [SETUP] menu settings are reset to the initial settings.

- When the [RESET] setting is selected during recording, the operation that resets the lens is also performed at the same time. You will hear the sound of the lens operating but this is normal and not indicative of malfunctioning.
- When the [REC] Mode settings are reset, the following settings are also reset.
  – The data registered with [FACE RECOG.]
  – The setting and registration for My Scene Mode (P61)
- When [SETUP] menu settings are reset, the following settings are also reset. In addition, [ROTATE DISP.] (P137) is set to [ON], and [FAVORITE] (P138) is set to [OFF] in [PLAYBACK] Mode menu.
  – The birthday and name settings for [BABY1]/[BABY2] (P68) and [PET] (P69) in Scene Mode
  – The departure and return dates of [TRAVEL DATE] (P91), and the set content of [LOCATION] (P92) and [WORLD TIME] (P93) of Travel Mode
- The folder number and the clock setting are not changed.

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[USB] **[USB MODE]**	Select the USB communication system after or before connecting the camera to your PC or your printer with the USB connection cable (supplied).
	[SELECT ON CONNECTION]: Select either [PC] or [PictBridge(PTP)] if you connected the camera to a PC or a printer supporting PictBridge. **[PictBridge(PTP)]:** Set after or before connecting to a printer supporting PictBridge. **[PC]:** Set after or before connecting to a PC.

- When [PC] is selected, the camera is connected via the “USB Mass Storage” communication system.
- When [PictBridge(PTP)] is selected, the camera is connected via the “PTP (Picture Transfer Protocol)” communication system.

[VIDEO OUT]	Set to match the colour television system in each country. (Playback Mode only)	
	[NTSC]:	Video output is set to NTSC system.
	[PAL]:	Video output is set to PAL system.

- This will operate when the AV cable or HDMI mini cable (optional) is connected.

[TV ASPECT]	Set to match the type of TV. (Playback Mode only)	
	[16:9]:	When connecting to a 16:9 screen TV.
	[4:3]:	When connecting to a 4:3 screen TV.

- This will work when the AV cable is connected.

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[HDMI MODE]	Set the format for the HDMI output when playing back on the HDMI compatible high definition TV connected with this unit using the HDMI mini cable (optional).
	[AUTO]: The output resolution is automatically set based on the information from the connected TV. **[1080i]:** The interlace method with 1080 available scan lines is used for output. **[720p]:** The progressive method with 720 available scan lines is used for output. **[576p]**$*1$**/[480p]**$*2$**:** The progressive method with 576$*1$/480$*2$ available scan lines is used for output.

$*1$ When [VIDEO OUT] is set to [PAL]
$*2$ When [VIDEO OUT] is set to [NTSC]

- **Interlace method/progressive method**
  i= interlace scanning is scanning the screen with half of the effective scanning lines every 1/50 seconds, where p= progressive scanning is a high density image signal that is scanning the screen with all the effective scanning lines every 1/50 seconds.
  The [HDMI] terminal on this unit is compatible with high definition output [1080i]. It is necessary to have a compatible TV to enjoy progressive and high definition images.
- If the images are not output on the TV when the setting is [AUTO], match with the image format your TV can display, and select number of effective scanning lines. (Please read the operating instructions for the TV.)
- This will work when the HDMI mini cable (optional) is connected.
- Refer to P145 for details.

[VIERA Link]	Setup so this unit can be controlled by the remote control of the VIERA by automatically coupling this unit with the VIERA Link compatible equipment using HDMI mini cable (optional).	
	[OFF]:	Operation is performed with the buttons on this unit.
	[ON]:	Remote control operation of the VIERA Link compatible equipment is enabled. (Not all operations are possible) Button operation of the main unit will be limited.

- This will work when the HDMI mini cable (optional) is connected.
- Refer to P148 for details.

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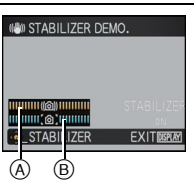
Ver. **[VERSION DISP.]**	It is possible to check which version of firmware is on the camera.

[FORMAT]	The built-in memory or card is formatted. Formatting irretrievably deletes all the data so check the data carefully before formatting.

- Use a battery with sufficient battery power or the AC adaptor (optional) and DC coupler (optional) when formatting. Do not turn the camera off during formatting.
- If a card has been inserted, only the card is formatted. To format the built-in memory, remove the card.
- If the card has been formatted on a PC or other equipment, format it on the camera again.
- It may take longer to format the built-in memory than the card.
- If you cannot format, contact the dealer or your nearest Service Centre.

[LANGUAGE]	Set the language displayed on the screen.

- If you set a different language by mistake, select [] from the menu icons to set the desired language.

DEMO **[DEMO MODE]**	Displays the amount of jitter the camera has detected. ([STABILIZER DEMO.]) The camera's features are displayed as slide shows. ([AUTO DEMO])
	[STABILIZER DEMO.] Ⓐ Amount of jitter Ⓑ Amount of jitter after correction  **[AUTO DEMO]:** **[OFF]** **[ON]**

- The Stabilizer function is switched between [ON] and [OFF] every time [MENU/SET] is pressed during the [STABILIZER DEMO.].
- In Playback Mode, [STABILIZER DEMO.] cannot be displayed.
- [STABILIZER DEMO.] is an approximation.
- Press [DISPLAY] to close [STABILIZER DEMO.].
- [AUTO DEMO] has no TV output capability even when it is in Playback Mode.
- Press [MENU/SET] to close [AUTO DEMO].

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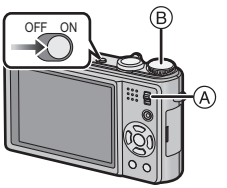
Mode switching

Selecting the [REC] Mode, and Record Still Picture or Motion Picture

1 **Turn the camera on.**

Ⓐ [REC]/[PLAYBACK] selector switch
Ⓑ Mode dial

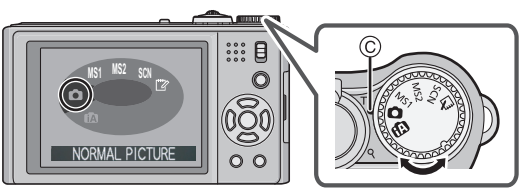


2 **Slide the [REC]/[PLAYBACK] selector switch to [📷].**

3 **Switching the mode by rotating the Mode dial.**

Align a desired mode with part Ⓒ.

- **Rotate the Mode dial slowly and surely to adjust to each mode. (The mode dial rotates 360 °)**



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■ List of [REC] Modes

Intelligent Auto Mode (P34)

The subjects are recorded using settings automatically selected by the camera.

Normal Picture Mode (P38)

The subjects are recorded using your own settings.

My Scene Mode (P61)

Pictures are taken using previously registered recording scenes.

Scene Mode (P61)

This allows you to take pictures that match the scene being recorded.

Clipboard Mode (P113)

Record as a memo.

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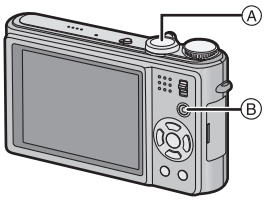
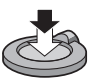


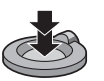
Ⓐ Shutter button
Ⓑ Motion picture button

Taking the still picture

1 **Press the shutter button halfway to focus.**



2 **Press the shutter button fully (push it in further), and take the picture.**



■ **For more details, refer to the explanation of each Recording Mode.**

Recording the motion picture

1 **Press the motion picture button to start the recording.**

2 **Press the motion picture button again to stop the recording.**

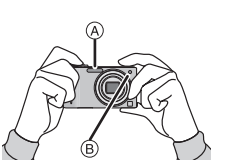
- Sound will go off when pressing the motion picture button indicating start/stop of motion picture recording.
  Sound volume can be set in [BEEP LEVEL] (P25).
- Motion pictures cannot be recorded in Clipboard Mode (P113).

■ **Motion Picture recording appropriate for each mode is possible. For more details, refer to "Recording Motion Picture" (P77).**

■ **Tips for taking good pictures**

Ⓐ Flash
Ⓑ AF Assist Lamp

- Hold the camera gently with both hands, keep your arms still at your side and stand with your feet slightly apart.
- Be careful not to move the camera when you press the shutter button.
- Do not cover the flash or the AF Assist Lamp with your fingers or other objects.
- Do not touch the front of the lens.



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[REC] Mode: iA

Taking Pictures Using the Automatic Function
(Intelligent Auto Mode)

The camera will set the most appropriate settings to match the subject and the recording conditions so we recommend this mode for beginners or those who want to leave the settings to the camera and take pictures easily.

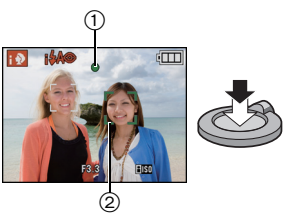
- The following functions are activated automatically.
  – Scene Detection/[STABILIZER]/[INTELLIGENT ISO]/Face Detection/Quick AF/[I.EXPOSURE]/Digital Red-eye Correction/Backlight Compensation/[I.RESOLUTION]/Intelligent Zoom

1 **Slide the [REC]/[PLAYBACK] selector switch to [📷].**

2 **Set the Mode dial to [iA].**

3 **Press the shutter button halfway to focus.**

- The focus indication ① (green) lights when the subject is focused.
- The AF area ② is displayed around the subject's face by the Face Detection function. In other cases, it is displayed at the point on the subject which is in focus.
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- The maximum close-up distance (the shortest distance at which the subject can be taken) differs depending on the zoom magnification.



4 **Press the shutter button fully (push it in further), and take the picture.**

- The access indication (P16) lights red when pictures are being recorded on the built-in memory (or the card).

■ **When taking pictures using the flash** (P51)
- When [iS] is selected, [iSA], [iSA👁], [iS👁] or [iS] is set depending on the type of subject and brightness.
- When [iSA👁] or [iS👁] is set, Digital Red-Eye Correction is enabled.
- Shutter speed will be slower during [iS👁] or [iS].

■ **When taking pictures using the Zoom** (P41)

■ **When recording motion pictures** (P77)

■ **To take pictures using the Face Recognition function (which stores faces of frequent subjects with information such as their names and birthdays)** (P84)

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Scene Detection

When the camera identifies the optimum scene, the icon of the scene concerned is displayed in blue for 2 seconds, after which its colour changes to the usual red.

[iA] →

[i-PORTRAIT]	
[i-SCENERY]	
[i-MACRO]	
[i-NIGHT PORTRAIT]	• Only when [iA] is selected
[i-NIGHT SCENERY]	
[i-SUNSET]	
[i-BABY]*	

- [iA] is set if none of the scenes are applicable, and the standard settings are set.
- When [ ], [ ] or [ ] is selected, the camera automatically detects a person's face, and it will adjust the focus and exposure. **(Face Detection)** (P102)
- If a tripod is used, for instance, and the camera has judged that camera shake is minimal when the Scene Mode has been identified as [ ], the shutter speed will be set to a maximum of 8 seconds.Take care not to move the camera while taking pictures.
- When [FACE RECOG.] is set to [ON], and the face similar to the registered face is detected, [R] is displayed in the top right of [ ], [ ] and [ ].

* When [FACE RECOG.] is set to [ON], [ ] will be displayed for birthdays of registered faces already set only when the face of a person 3 years old or younger is detected.

Note

- Due to factors such as size, contrast, motion and proximity a different mode may be identified for the same subject.
  - Subject conditions: When the face is bright or dark, the size of the subject, the colour of the subject, the distance to the subject, the contrast of the subject, when the subject is moving
  - Recording conditions: Sunset, sunrise, under low brightness conditions, when the camera is shaken, when zoom is used
- For the best results, it is recommended that you take pictures in the appropriate Recording Mode.
- **The Backlight Compensation**
  Backlight refers to when light comes from the back of a subject.
  In this case, the subject will become dark, so this function compensates the backlight by brightening the whole of the picture automatically.

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AF Tracking Function

It is possible to set the focus to the specified subject. Focus will keep following the subject automatically even if it moves.

1 Press ▲.

- [ ] is displayed in the upper left of the screen.
- AF Tracking frame is displayed in the centre of the screen.
- Press ▲ again to cancel.

2 Bring the subject to the AF Tracking frame, and press ▼ to lock the subject.

- AF Tracking frame will turn yellow.
- An optimum scene for the specified subject will be chosen.
- Press ▲ to cancel.

Note

- [FACE RECOG.] does not work during AF Tracking.
- Please read the Note regarding the AF Tracking on P103.

[Happy] colour ([COLOR MODE])

In Intelligent Auto Mode, [Happy] can be selected in [COLOR MODE] of the [REC] menu. When [Happy] is selected, it is possible to automatically take a picture with a higher level of brilliance for the colour brightness and vividness.

- [Happy] is displayed on the recording screen when [Happy] is selected.

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Settings in Intelligent Auto Mode

• Only the following functions can be set in this mode.
[REC] Mode menu
– [PICTURE SIZE]*1 (P95)/[BURST] (P106)/[COLOR MODE]*1 (P108)/[FACE RECOG.] (P84)
*1 The settings which can be selected are different from when other [REC] Modes are used.
[MOTION PICTURE] Mode menu
– [REC MODE] (P81)/[REC QUALITY]*2 (P81)
*2 The settings which can be selected are different from when other [REC] Modes are used.
[TRAVEL MODE] menu
– [TRAVEL DATE]/[LOCATION]/[WORLD TIME]
[SETUP] menu
– [CLOCK SET]/[BEEP]/[LANGUAGE]/[STABILIZER DEMO.]
• The settings of the following items are fixed.

Item	Settings
[GUIDE LINE] (P26)	([REC. INFO.]: [OFF])
[ECONOMY] ([SLEEP MODE]) (P26)	[5MIN.]
[AUTO REVIEW] (P27)	[2SEC.]
Flash (P51)	iA/
[QUALITY] (P96)	
[INTELLIGENT ISO] (P97)	ISO MAX 1600
[WHITE BALANCE] (P99)	[AWB]
[AF MODE] (P101)	(Set to [ ] when a face cannot be detected*1)
[PRE AF] (P104)	Q.AF
[I.EXPOSURE] (P104)	[ON]
[I.RESOLUTION] (P107)	[i.ZOOM]
[STABILIZER] (P109)	[AUTO]*2
[AF ASSIST LAMP] (P111)	[ON]
[RED-EYE REMOVAL] (P111)	[ON]
[CONTINUOUS AF] (P112)	[ON]
[WIND CUT] (P112)	[OFF]

*1 Fix to [ ] when a face is not recognised during motion picture recording
*2 Fix to [MODE1] during motion picture recording
• The following functions cannot be used.
– [EXPOSURE]/[AUTO BRACKET]/White Balance fine adjustment/[DIGITAL ZOOM]/[AUDIO REC.]/[MIN. SHTR SPEED]/[HISTOGRAM]
• The other items on the [SETUP] menu can be set in a mode such as the Normal Picture Mode. What is set will be reflected in the Intelligent Auto Mode.

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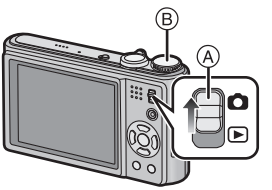
[REC] Mode:

Taking Pictures with Your Favourite Settings
(Normal Picture Mode)

The camera automatically sets the shutter speed and the aperture value according to the brightness of the subject.
You can take pictures with greater freedom by changing various settings in the [REC] menu.

1 Slide the [REC]/[PLAYBACK] selector switch to [].

Ⓐ [REC]/[PLAYBACK] selector switch
Ⓑ Mode dial



2 Set the Mode dial to [].

- To change the setting while taking pictures, refer to “Using the [REC] Mode Menu” (P95).

3 Aim the AF area at the point you want to focus on.

4 Press the shutter button halfway to focus.

- The focus indication (green) lights when the subject is focused.
- The focus range is 50 cm (1.64 feet) (Wide)/2 m (6.56 feet) (Tele) to ∞.
- If pictures are to be taken at an even closer range, refer to “Taking Close-up Pictures” (P56).

5 Press the halfway pressed shutter button fully to take a picture.

- The access indication lights (P16) red when pictures are being recorded on the built-in memory (or the card).

■ **To adjust the exposure and take pictures when the image appears too dark (P59)**
■ **To adjust the colours and take pictures when the image appears too red (P99)**
■ **When recording motion pictures (P77)**

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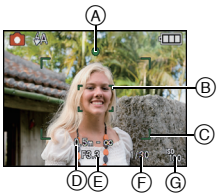
Focusing

Aim the AF area at the subject, and then press the shutter button halfway.



Focus	When the subject is focused	When the subject is not focused
Focus indication	On	Blinks
AF area	White→Green	White→Red
Sound[*2]	Beeps 2 times	Beeps 4 times

Ⓐ Focus indication
Ⓑ AF area (normal)
Ⓒ AF area (when using the Digital Zoom or when it is dark)
Ⓓ Focus range
Ⓔ Aperture value[*1]
Ⓕ Shutter speed[*1]
Ⓖ ISO sensitivity

*1 If correct exposure cannot be achieved, it will be displayed in red. (However, it will not be displayed in red when the flash is used.)
*2 Sound volume can be set in [SHUTTER VOL.] (P25).

When the subject is not in focus (such as when it is not in the centre of the composition of the picture you want to take)

1 Aim the AF area at the subject, and then **press the shutter button halfway** to fix the focus and exposure.

2 **Press and hold the shutter button halfway** while moving the camera as you compose the picture.

• You can repeatedly retry the actions in step **1** before pressing the shutter button fully.

We recommend that you use the Face Detection function when taking pictures of people. (P101)

■ Subjects and recording conditions which are difficult to focus

• Fast-moving subjects, extremely bright subjects or subjects without contrast
• When the focus range display has appeared in red
• When recording subjects through windows or near shiny objects
• When it is dark or when jitter occurs
• When the camera is too close to the subject or when taking a picture of both distant and near subjects

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Preventing jitter (camera shake)

When the jitter alert [] appears, use [STABILIZER] (P109), a tripod or the self-timer (P58).

- Shutter speed will be slower particularly in the following cases. Keep the camera still from the moment the shutter button is pressed until the picture appears on the screen. We recommend using a tripod.
  - Slow sync./Red-Eye Reduction
  - In [PANORAMA ASSIST], [NIGHT PORTRAIT], [NIGHT SCENERY], [PARTY], [CANDLE LIGHT], [STARRY SKY], [FIREWORKS] or [HIGH DYNAMIC] in Scene Mode (P61)
  - When the shutter speed is slowed in [MIN. SHTR SPEED]

Direction Detection Function

Pictures recorded with the camera held vertically are played back vertically (rotated). (Only when [ROTATE DISP.] (P137) is set to [ON])

- The Direction Detection function may not operate correctly if recording is performed with the camera aimed up or down.
- Motion pictures taken with the camera held vertically are not displayed vertically.

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[REC] Mode:

Taking Pictures with the Zoom

Using the Optical Zoom/Using the Extra Optical Zoom (EZ)/Using the Intelligent Zoom/Using the Digital Zoom

You can zoom-in to make people and objects appear closer or zoom-out to record landscapes in wide angle. To make subjects appear even closer (maximum of 16.9×), do not set the picture size to the highest setting for each aspect ratio (4:3/3:2/16:9).
The zoom magnification can be increased by approximately 1.3× without noticeable deterioration in the picture by the Intelligent Resolution Technology when the Intelligent Zoom is used.
Even higher levels of magnification are possible when [DIGITAL ZOOM] is set to [ON] in [REC] menu.

To make subjects appear closer use (Tele)

Rotate the zoom lever towards Tele.

To make subjects appear further away use (Wide)

Rotate the zoom lever towards Wide.

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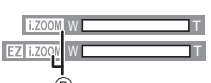
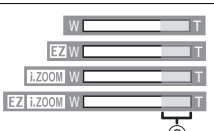
■ Types of zooms

Feature	Optical Zoom	Extra Optical Zoom (EZ)
Maximum magnification	8×	16.9×*
Picture quality	No deterioration	No deterioration
Conditions	None	[PICTURE SIZE] with EZ (P95) is selected.
Screen display		Ⓐ [EZ] is displayed.

Feature	Intelligent Zoom	Digital Zoom
Maximum magnification	10× (including Optical Zoom 8×) 21.1× (including Extra Optical Zoom 16.9×)	32× (including Optical Zoom 8×) 67.5× (including Extra Optical Zoom 16.9×) 40× (including Optical Zoom and [i.ZOOM] 10×) 84.4× (including Extra Optical Zoom and [i.ZOOM] 21.1×)
Picture quality	No noticeable deterioration	The higher the magnification level, the greater the deterioration.
Conditions	[I.RESOLUTION] (P107) on the [REC] menu is set to [i.ZOOM].	[DIGITAL ZOOM] (P107) on the [REC] menu is set to [ON].
Screen display	 Ⓑ [i.ZOOM] is displayed.	 Ⓒ The Digital Zoom range is displayed.

- **When using the Zoom function, an estimate of the focus range will appear in conjunction with the zoom display bar. (Example: 0.5 m – ∞)**

* The magnification level differs depending on [PICTURE SIZE] and [ASPECT RATIO] setting.

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■ Extra Optical Zoom mechanism

When you set the picture size to [3M] (3 million pixels), the 14M (14.1 million pixels) CCD area is cropped to the centre 3M (3 million pixels) area, allowing a picture with a higher zoom effect.

Note

- **The Digital Zoom cannot be set when iA or has been selected.**
- The indicated zoom magnification is an approximation.
- "EZ" is an abbreviation of "Extra Optical Zoom".
- The Optical Zoom is set to Wide (1×) when the camera is turned on.
- If you use the Zoom function after focusing on the subject, focus on the subject again.
- The lens barrel extends or retracts according to the zoom position. Take care not to interrupt the motion of the lens barrel while the zoom lever is rotated.
- When using the Digital Zoom, [STABILIZER] may not be effective.
- When using the Digital Zoom, we recommend using a tripod and the self-timer (P58) for taking pictures.
- [I.RESOLUTION] is fixed to [i.ZOOM] in Intelligent Auto Mode, Scene Mode✳ or Clipboard Mode.
  ✳ [i.ZOOM] cannot be used when in [HIGH SENS.], [HI-SPEED BURST], [FLASH BURST] or [PIN HOLE] in Scene Mode.
- The Extra Optical Zoom cannot be used in the following cases.
  – In Macro Zoom Mode
  – In [TRANSFORM], [HIGH SENS.], [HI-SPEED BURST], [FLASH BURST], [PIN HOLE] or [PHOTO FRAME] in Scene Mode
  – When recording motion pictures
- [DIGITAL ZOOM] cannot be used in the following cases.
  – In [TRANSFORM], [HIGH SENS.], [HI-SPEED BURST], [FLASH BURST], [PIN HOLE], [FILM GRAIN] or [PHOTO FRAME] in Scene Mode

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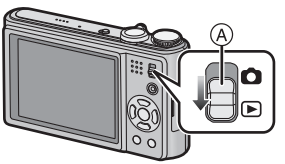
[PLAYBACK] Mode:

Playing Back Pictures ([NORMAL PLAY])

1 Slide the [REC]/[PLAYBACK] selector switch Ⓐ to [▶].



- Normal playback is set automatically in the following cases.
  - –When the mode is switched from [REC] to [PLAYBACK].
  - –When the camera is turned on while [REC]/[PLAYBACK] selector switch was at [▶].
- When the Mode dial is set to [], Clipboard will be displayed. Refer to “Viewing Clipboard Pictures” (P115) for information about playing back the Clipboard.

2 Press ◄/► to select the picture.

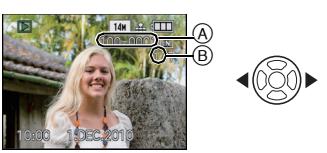
◄: Play back the previous picture

►: Play back the next picture

- Speed of picture forwarding/rewinding changes depending on the playback status.

■ Fast forwarding/Fast rewinding

Press and hold ◄/► during playback.



◄: Fast rewind

►: Fast forward

- The file number Ⓐ and the picture number Ⓑ only change one by one. Release ◄/► when the number of the desired picture appears to play back the picture.
- If you keep pressing ◄/►, the number of pictures forwarded/rewound increases.

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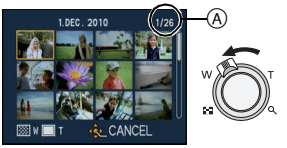
Displaying Multiple Screens (Multi Playback)

Rotate the zoom lever towards [▪] (W).



1 screen→12 screens→30 screens→Calendar screen display (P128)

Ⓐ Number of the selected picture and the total number of recorded pictures

- Rotate the zoom lever towards [🔍] (T) to return to the previous screen.
- Pictures are not rotated for display.
- Pictures displayed using [[!]] cannot be played back.

■ **To return to normal playback**

1 Press ▲/▼/◄/► to select a picture.

- An icon will be displayed depending on the recorded picture and the settings.

2 Press [MENU/SET].

- The picture that was selected will appear.

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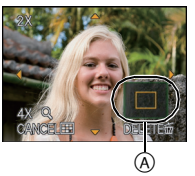
Using the Playback Zoom

Rotate the zoom lever towards [Q] (T).

1×→2×→4×→8×→16×

- When you rotate the zoom lever towards [▪] (W) after enlarging the picture, the magnification becomes lower.
- When you change the magnification, the zoom position indication Ⓐ appears for about 1 second, and the position of the enlarged section can be moved by pressing ▲/▼/◄/►.
- The more a picture is enlarged, the more its quality deteriorates.
- When you move the position to be displayed, the zoom position indication appears for about 1 second.

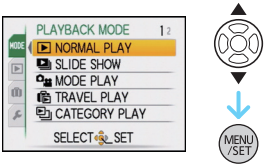


Note

- This camera complies with the DCF standard “Design rule for Camera File system” established by JEITA “Japan Electronics and Information Technology Industries Association” and with Exif “Exchangeable Image File Format”. Files which do not comply with the DCF standard cannot be played back.
- The lens barrel retracts about 15 seconds after switching from [REC] Mode to [PLAYBACK] Mode.
- If you want to save the enlarged picture, use the Cropping function. (P135)
- The Playback Zoom may not operate if pictures have been recorded with other equipment.
- Playback Zoom cannot be used during Motion Picture Playback or pictures with Audio Playback.

Switching the [PLAYBACK] Mode

1 **Press [MENU/SET] during playback.**
2 **Press ►.**
3 **Press ▲/▼ to select the item and then press [MENU/SET].**



[NORMAL PLAY] (P44)
All the pictures are played back.

[SLIDE SHOW] (P118)
The pictures are played back in sequence.

[MODE PLAY] (P121)
Playback in [PICTURE], [AVCHD Lite]*1, or [MOTION JPEG] can be selected.
*1 This is the specification to record and playback high definition images.

[TRAVEL PLAY] (P122)
The pictures taken in the Travel Mode are played back.

[CATEGORY PLAY] (P123)
The pictures grouped together in categories are played back.

[FAVORITE PLAY] (P124)*2
Your favourite pictures are played back.
*2 [FAVORITE PLAY] is not displayed when [FAVORITE] has not been set.

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[PLAYBACK] Mode:

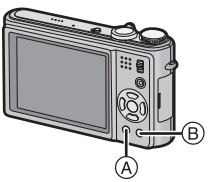
Deleting Pictures

Once deleted, pictures cannot be recovered.
• Pictures on the built-in memory or the card, that are being played back will be deleted.

To delete a single picture

1 **Select the picture to be deleted, and then press [🗑].**

Ⓐ [DISPLAY] button
Ⓑ [🗑] button



2 **Press ◄ to select [YES] and then press [MENU/SET].**

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To delete multiple pictures (up to 50) or all the pictures

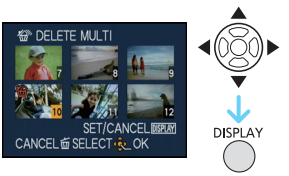
1 **Press [🗑].**

2 **Press ▲/▼ to select [DELETE MULTI] or [DELETE ALL] and then press [MENU/SET].**

- [DELETE ALL] → step **5**.

3 **Press ▲/▼/◀/▶ to select the picture, and then press [DISPLAY] to set.** (Repeat this step.)

- [🗑] appears on the selected pictures. If [DISPLAY] is pressed again, the setting is cancelled.



4 **Press [MENU/SET].**

5 **Press ▲ to select [YES] and then press [MENU/SET] to set.**

■ When [DELETE ALL] has been selected with the [FAVORITE] (P138) setting

The selection screen is displayed again. Select [DELETE ALL] or [ALL DELETE EXCEPT★], press ▲ to select [YES] and delete the pictures. ([ALL DELETE EXCEPT★] cannot be selected if no pictures have been set as [FAVORITE].)

Note

- Do not turn the camera off while deleting (while [🗑] is displayed). Use a battery with sufficient battery power or the AC adaptor (optional) and DC coupler (optional).
- If you press [MENU/SET] while deleting pictures using [DELETE MULTI], [DELETE ALL] or [ALL DELETE EXCEPT ★], the deleting will stop halfway.
- Depending on the number of pictures to be deleted, it may take some time to delete them.
- If pictures do not conform to the DCF standard or are protected (P141), they will not be deleted even if [DELETE ALL] or [ALL DELETE EXCEPT★] is selected.

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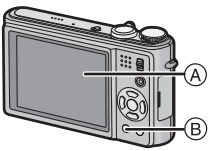
About the LCD Monitor

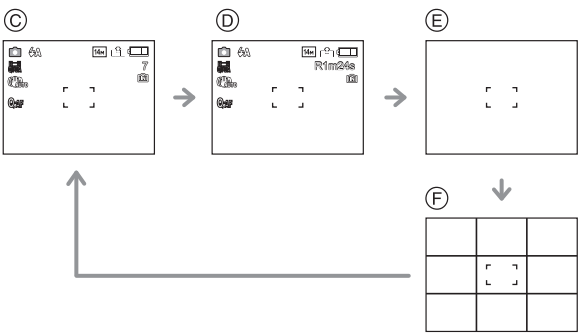
Press [DISPLAY] to change.



Ⓐ LCD monitor
Ⓑ [DISPLAY] button
• When the menu screen appears, the [DISPLAY] button is not activated. During Playback Zoom (P46), while playing back motion pictures (P125) and during a slide show (P118), you can only select "Normal display Ⓖ" or "No display Ⓘ".

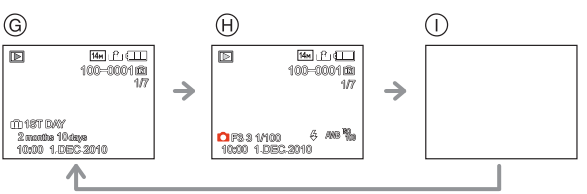
In Recording Mode

Ⓒ Normal display*1, 2
Ⓓ Normal display*1, 2
Ⓔ No display
Ⓕ No display (Recording guideline)*1, 3



In Playback Mode

Ⓖ Normal display
Ⓗ Display with recording information*1
Ⓘ No display



*1 If the [HISTOGRAM] in [SETUP] menu is set to [ON], histogram will be displayed.
*2 It will switch between available recording time and number of recordable pictures.
*3 Set the pattern of the guidelines displayed by setting [GUIDE LINE] in [SETUP] menu. You can also set whether or not to have the recording information displayed when the guidelines are displayed.

Note
• In [NIGHT PORTRAIT], [NIGHT SCENERY], [STARRY SKY] and [FIREWORKS] in Scene Mode, the guideline is grey. (P61)
• In [PHOTO FRAME] in Scene Mode, the guideline is not displayed. (P61)

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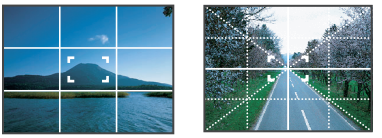
■ Recording guideline

When you align the subject on the horizontal and vertical guidelines or the cross point of these lines, you can take pictures with well-designed composition by viewing the size, the slope and the balance of the subject.

Ⓐ Ⓑ



Ⓐ **[▦]:** This is used when dividing the entire screen into 3×3 for taking pictures with a well-balanced composition.

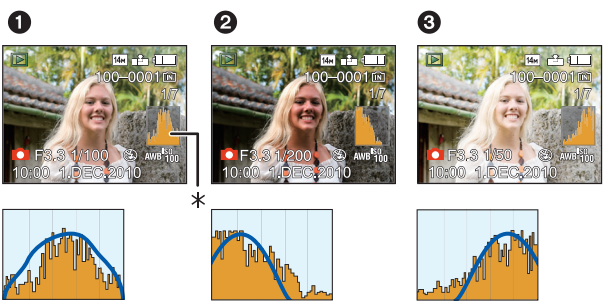
Ⓑ **[⊠]:** This is used when you want to position the subject at the exact centre of the screen.

■ About the Histogram

A Histogram is a graph that displays brightness along the horizontal axis (black to white) and the number of pixels at each brightness level on the vertical axis.
It allows you to easily check a picture's exposure.

Examples of Histogram

❶ Properly Exposed
❷ Underexposed
❸ Overexposed
✳ Histogram



Note

- **When you take pictures with the flash or in dark places, the Histogram is displayed in orange because the recorded picture and the Histogram do not match each other.**
- The Histogram is an approximation in the Recording Mode.
- The Histogram of a picture may not match in the Recording Mode and the Playback Mode.
- The Histogram displayed in this camera does not match Histograms displayed by picture editing software used in PCs etc.
- Histograms are not displayed in the following cases:
  – Intelligent Auto Mode
  – Multi Playback
  – Recording motion pictures
  – Playback Zoom
  – Clipboard Mode
  – Calendar
  – [PHOTO FRAME] in Scene Mode
  – When HDMI cable is connected

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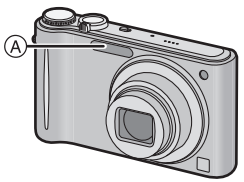
[REC] Mode: iA MS1 MS2 SCN

Taking Pictures Using the Built-in Flash



Ⓐ **Photo flash**
Do not cover the flash with your fingers or other objects.

Switching to the appropriate flash setting

Set the flash to match the recording.

1 **Press ► [ϟ].**

2 **Press ▲/▼ to select a mode.**

- You can also press ► [ϟ] to select.
- For information about flash settings that can be selected, refer to “Available Flash Settings by Recording Mode”. (P53)

3 **Press [MENU/SET].**

- You can also press the shutter button halfway to finish.
- The menu screen disappears after about 5 seconds. At this time, the selected item is automatically set.

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Item	Description of settings
: AUTO	The flash is automatically activated when the recording conditions make it necessary.
: AUTO/Red-Eye Reduction*	The flash is automatically activated when the recording conditions make it necessary. It is activated once before the actual recording to reduce the red-eye phenomenon (eyes of the subject appearing red in the picture) and then activated again for the actual recording. • Use this when you take pictures of people in low lighting conditions.
: Forced Flash ON **: Forced ON/Red-Eye Reduction***	The flash is activated every time regardless of the recording conditions. • **Use this when your subject is back-lit or under fluorescent light.** • **The flash setting is set to [ ] only when you set [PARTY] or [CANDLE LIGHT] in Scene Mode.** **(P61)**
: Slow sync./Red-Eye Reduction*	If you take a picture with a dark background landscape, this feature will slow the shutter speed when the flash is activated so that the dark background landscape will become bright. Simultaneously it reduces the red-eye phenomenon. • **Use this when you take pictures of people in front of a dark background.**
: Forced Flash OFF	The flash is not activated in any recording conditions. • **Use this when you take pictures in places where the use of the flash is not permitted.**

* **The flash is activated twice. The subject should not move until the second flash is activated. Interval until the second flash depends on the brightness of the subject. [RED-EYE REMOVAL]** **(P111)** **on the [REC] Mode menu is set to [ON], [ ] appears on the flash icon.**

■ About the Digital Red-Eye Correction

When [RED-EYE REMOVAL] (P111) has been set to [ON] and Red-Eye Reduction ([ ], [ ], [ ]) is selected, Digital Red-Eye Correction is performed whenever the flash is used. The camera automatically detects red-eye and corrects the picture.
(Only available when [AF MODE] is set to [ ] and Face Detection is active)

- Under certain circumstances, red-eye cannot be corrected.
- In the following cases, Digital Red-Eye Correction does not work.
  – When the flash setting is set to [ ], [ ] or [ ]
  – When [RED-EYE REMOVAL] is set to [OFF]
  – When [AF MODE] is set to anything except [ ]

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■ Available Flash Settings by Recording Mode

The available flash settings depend on the Recording Mode.
(○: Available, —: Not available, ●: Scene Mode initial setting)

	ϟA	ϟA◎	ϟ	ϟS◎	ϟ ◎	⊗
iA	○*	—	—	—	—	○
	○	○	○	○	—	○
	○	●	○	—	—	○
	○	●	○	—	—	○
	○	●	○	—	—	○
	○	●	○	—	—	○
	—	—	—	—	—	●
	—	—	—	—	—	●
	●	—	○	—	—	○
	—	—	—	●	—	○
	—	—	—	—	—	●
	○	—	○	—	—	●
	—	—	—	●	○	○
	—	—	—	○	○	●
1	○	●	○	—	—	○
2	○	●	○	—	—	○

	ϟA	ϟA◎	ϟ	ϟS◎	ϟ ◎	⊗
	○	—	○	—	—	●
	—	—	—	—	—	●
	○	—	○	—	—	●
	—	—	—	—	—	●
	—	—	●	—	—	—
	—	—	—	—	—	●
	—	—	—	—	—	●
	—	—	●	—	—	○
	●	—	○	—	—	○
	—	—	—	—	—	●
	●	—	○	—	—	○
	●	—	○	—	—	○
	—	—	—	○	—	●
	●	○	○	—	—	○
	○	—	○	—	—	●
	○	—	○	—	—	○

* [iϟA] is displayed. [iϟA], [iϟA◎], [iϟS◎] or [iϟS] is set depending on the type of subject and brightness.

- The flash setting may change if the Recording Mode is changed. Set the flash setting again if necessary.
- The flash setting is memorised even if the camera is turned off. However, the Scene Mode flash setting is reset to the initial setting when the Scene Mode is changed.

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■ The available flash range to take pictures

• The available flash range is an approximation.

ISO sensitivity	Available flash range	
	Wide	Tele
AUTO	60 cm (1.97 feet) to 5.3 m (17.4 feet)	1.0 m (3.28 feet) to 2.9 m (9.51 feet)
ISO80	60 cm (1.97 feet) to 1.1 m (3.61 feet)	∗
ISO100	60 cm (1.97 feet) to 1.3 m (4.26 feet)	∗
ISO200	60 cm (1.97 feet) to 1.8 m (5.91 feet)	1.0 m (3.28 feet)
ISO400	60 cm (1.97 feet) to 2.6 m (8.53 feet)	1.0 m (3.28 feet) to 1.4 m (4.59 feet)
ISO800	80 cm (2.62 feet) to 3.7 m (12.1 feet)	1.0 m (3.28 feet) to 2.1 m (6.88 feet)
ISO1600	1.15 m (3.77 feet) to 5.3 m (17.4 feet)	1.0 m (3.28 feet) to 2.9 m (9.51 feet)

∗ Recording with zoom magnification of up to 4× is possible. Pictures recorded with Tele may be darker than normal.

• In [HIGH SENS.] (P69) in Scene Mode, the ISO sensitivity automatically switches to between [ISO1600] and [ISO6400] and the available flash range also differs.

Wide: Approx. 1.15 m (3.77 feet) to approx. 10.6 m (34.8 feet)
Tele: Approx. 1.0 m (3.28 feet) to approx. 5.9 m (19.4 feet)

• In [FLASH BURST] (P71) in Scene Mode, the ISO sensitivity automatically switches to between [ISO100] and [ISO3200] and the available flash range also differs.

Wide: Approx. 60 cm (1.97 feet) to approx. 3.4 m (11.2 feet)
Tele: Approx. 1.0 m (3.28 feet) to approx. 1.9 m (6.23 feet)

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■ Shutter speed for each flash setting

Flash setting	Shutter speed (Sec.)
ϟA	1/30∗1 to 1/2000
ϟA👁	
ϟ ϟ👁	

Flash setting	Shutter speed (Sec.)
ϟS👁	1∗1 to 1/2000 1 or 1/4 to 1/2000∗2
⊛	

∗1 It may vary depending on the [MIN. SHTR SPEED] setting. (P105)
∗2 When [MIN. SHTR SPEED] is set to [AUTO]. (P105)
- ∗2: The shutter speed becomes a maximum of 1 second in the following cases.
  – When the Optical Image Stabilizer is set to [OFF].
  – When the camera has determined that there is very little jitter when the Optical Image Stabilizer is set to [MODE1], [MODE2] or [AUTO].
- In Intelligent Auto Mode, shutter speed changes depending on the identified scene.
- In Scene Mode, shutter speed will be different from the above table.

Note

- If you bring the flash too close to an object, the object may be distorted or discoloured by the heat or lighting from the flash.
- When you take a picture beyond the available flash range, the exposure may not be adjusted properly and the picture may become too bright or too dark.
- When the flash is being charged, the flash icon blinks red, and you cannot take a picture even when you press the shutter button fully.
- The White Balance may not be properly adjusted if the flash level is insufficient for the subject.
- When the shutter speed is fast, the flash effect may not be sufficient.
- It may take time to charge the flash if you are taking pictures in quick succession. Take a picture after the access indication disappears.
- The Red-Eye Reduction effect differs between people. Also, if the subject is far away from the camera or was not looking at the first flash, the effect may not be evident.

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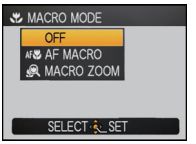
[REC] Mode:

Taking Close-up Pictures

1 **Press ▼ [🌷].**



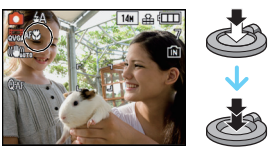
2 **Press ▲/▼ to select a mode.**

3 **Press [MENU/SET].**

- You can also press the shutter button halfway to finish.
- The menu screen disappears after about 5 seconds. At this time, the selected item is automatically set.

4 **Press the shutter button halfway to focus and then press it fully to take the picture.**

- [AF🌷] is displayed during AF Macro Mode and [🔍] is displayed during Macro Zoom Mode.
- To cancel, select [OFF] in step **2**.
- Zoom range, focus range, and zoom magnification are displayed during zooming.

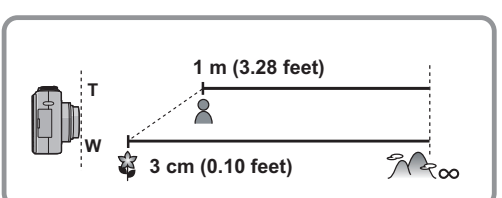


[AF MACRO]

This mode allows you to take close-up pictures of a subject, e.g. when taking pictures of flowers. You can take pictures of a subject as close as 3 cm (0.10 feet) from the lens by rotating the zoom lever upmost to Wide (1×).

■ Focus range in AF Macro Mode

✳ The focus range changes in steps.



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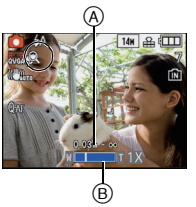
[MACRO ZOOM]

You can take a picture with the Digital Zoom up to 3× while maintaining the distance to the subject for the extreme Wide position [3 cm (0.10 feet)].

Ⓐ Focus range

- Focus range will be 3 cm (0.10 feet) to ∞ during Macro Zoom Mode regardless of the zoom position.
- Zoom range will be displayed in blue. (Digital Zoom range Ⓑ)
- The image quality is poorer than during normal recording.
- Macro Zoom Mode cannot be used when [] in [AF MODE] is set.
- The following functions are not activated.
  – Extra Optical Zoom
  – Intelligent Zoom



Note

- We recommend using a tripod and the self-timer.
- We recommend setting the flash to [] when you take pictures at close range.
- If the distance between the camera and the subject is beyond the focus range of the camera, the picture may not be properly focused even if the focus indication lights.
- When a subject is close to the camera, the effective focus range is significantly narrowed. Therefore, if the distance between the camera and the subject is changed after focusing on the subject, it may become difficult to focus on it again.
- Macro Mode gives priority to a subject close to the camera. Therefore, if the distance between the camera and the subject is far, it takes longer to focus on it.
- When you take pictures at close range, the resolution of the periphery of the picture may decrease slightly. This is not a malfunction.

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[REC] Mode:

Taking Pictures with the Self-timer

1 **Press ◄ [⏲].**

2 **Press ▲/▼ to select a mode.**

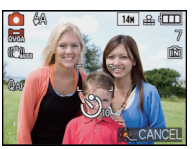
- You can also press ◄ [⏲] to select.

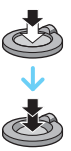
3 **Press [MENU/SET].**

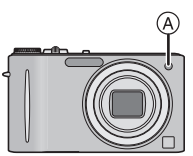
- You can also press the shutter button halfway to finish.
- The menu screen disappears after about 5 seconds. At this time, the selected item is automatically set.

4 **Press the shutter button halfway to focus and then press it fully to take the picture.**

- The self-timer indicator Ⓐ blinks and the shutter is activated after 10 seconds (or 2 seconds).
- If you press [MENU/SET] while the self-timer is set, the self-timer setting is cancelled.







Note

- When using a tripod etc., setting the self-timer to 2 seconds is a convenient way to avoid the jitter caused by pressing the shutter button.
- When you press the shutter button once fully, the subject is automatically focused just before recording. In dark places, the self-timer indicator will blink and then may turn on brightly operating as an AF Assist Lamp (P111) to allow the camera to focus on the subject.
- We recommend using a tripod when recording with the self-timer.
- The number of pictures which can be taken in [BURST] is fixed to 3.
- The number of pictures which can be taken in [FLASH BURST] in Scene Mode is fixed to 5.
- Self-timer cannot be set to 10 seconds in [SELF PORTRAIT] in Scene Mode or Clipboard Mode.
- Setting of the self-timer cannot be performed in following conditions.
  – In [HI-SPEED BURST] and [UNDERWATER] in scene mode
  – When recording motion pictures

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[REC] Mode:

Compensating the Exposure

Use this function when you cannot achieve appropriate exposure due to the difference in brightness between the subject and the background. Look at the following examples.

Underexposed | **Properly exposed** | **Overexposed**

Compensate the exposure towards positive.

Compensate the exposure towards negative.

1 **Press ▲ [+/-] until [EXPOSURE] appears, compensate the exposure with ◄/►.**

- Select [0 EV] to return to the original exposure.

2 **Press [MENU/SET] to finish.**

- You can also press the shutter button halfway to finish.

Note

- EV is an abbreviation of [Exposure Value]. It refers to the amount of light given to the CCD by the aperture value and the shutter speed.
- The exposure compensation value appears on the lower left of the screen.
- The set exposure value is memorised even if the camera is turned off.
- The compensation range of the exposure will be limited depending on the brightness of the subject.
- Exposure compensation cannot be used when in [STARRY SKY] in Scene Mode.

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[REC] Mode:

Taking Pictures Using Auto Bracket

In this mode, 3 pictures are automatically recorded in the selected exposure compensation range each time the shutter button is pressed. You can select the picture with the desired exposure from the 3 pictures with different exposures.

With Auto Bracket ±1 EV

1st picture	2nd picture	3rd picture
±0 EV	−1 EV	+1 EV

1 Press ▲ [⊡] several times until [AUTO BRACKET] appears, set the compensation range of the exposure with ◄/►.

- When you do not use Auto Bracket, select [OFF] (0).

2 Press [MENU/SET] to finish.

- You can also press the shutter button halfway to finish.

Note

- When setting Auto Bracket, [⊡] appears on the screen.
- When taking pictures using Auto Bracket after setting the exposure compensation range, the pictures taken are based on the selected exposure compensation range. When the exposure is compensated, the exposure compensation value appears on the lower left of the screen.
- The Auto Bracket setting is cancelled if you turn the camera off or [SLEEP MODE] is activated.
- When Auto Bracket is set, the Auto Review function is activated regardless of the Auto Review setting. You cannot set the Auto Review function in the [SETUP] menu.
- The exposure may not be compensated with Auto Bracket depending on the brightness of the subject.
- **[⊘] is set for the flash when Auto Bracket is set.**
- **Burst is cancelled when Auto Bracket is set.**
- Setting of the auto bracket cannot be performed in following conditions.
  - In [TRANSFORM], [PANORAMA ASSIST], [HI-SPEED BURST], [FLASH BURST], [STARRY SKY], [PIN HOLE], [FILM GRAIN] and [PHOTO FRAME] in Scene Mode
  - When recording motion pictures

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[REC] Mode: MS1 MS2 SCN

Taking Pictures that Match the Scene Being Recorded (Scene Mode)

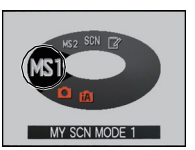
When you select a Scene Mode to match the subject and recording situation, the camera sets the optimal exposure and hue to obtain the desired picture.

Registering scenes in Scene Mode (My Scene Mode)

You can register the Scene Mode you use most frequently as one of the [REC] Mode.

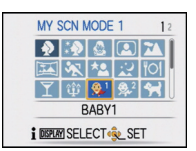
1 Slide the [REC]/[PLAYBACK] selector switch to [📷].

2 Set the Mode dial to [MS1] or [MS2].



- If you have already registered My Scene Mode, the icon for the registered Scene Mode will be displayed, rather than [MS1] or [MS2].
- Both [MS1] and [MS2] have the same function. You can switch easily by selecting scenes that are used often which are convenient for the user.

3 Press ▲/▼/◄/► to select the Scene Mode.

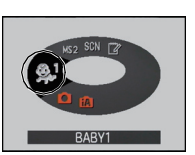


- You can switch menu screens from any menu item by rotating the zoom lever.

4 Press [MENU/SET] to set.

- The menu screen is switched to the recording screen in the selected Scene Mode.
- The selected Scene Mode is stored as a My Scene Mode. You can then use the stored Scene Mode when you next take pictures by setting the Mode dial to [MS1] or [MS2].

■ Changing My Scene Mode



1. **Set the Mode dial to [MS1] or [MS2].**
2. **Press [MENU/SET] to display the menu screen.**
3. **Press ▲ to select [SCN], switch menus and press ►.**
   - For details on switching menus, refer to P22.
4. **Press ▲/▼/◄/► to select the Scene Mode.**
5. **Press [MENU/SET] to set.**

■ About the information

- If you press [DISPLAY] when selecting a Scene Mode, explanations about each Scene Mode are displayed. (If you press [DISPLAY] again, the screen returns to the Scene Mode menu.)

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Selecting the Scene Mode for each recording (Scene Mode)

You can select the Scene Mode each time you make a recording.

1 Set the Mode dial to [SCN].

2 Press ▲/▼/◄/► to select the Scene Mode, and then press [MENU/SET] to set.

- You can switch menu screens from any menu item by rotating the zoom lever.
- The recording screen for the selected Scene Mode will be displayed.

Note

- To change the Scene Mode, press [MENU/SET] and then press ►, and return to step **3** on P61.
- The Scene Mode flash setting is reset to the initial setting when the Scene Mode is changed.
- When you take a picture with a Scene Mode that is not adequate for the purpose, the hue of the picture may differ from the actual scene.
- The following items cannot be set in Scene Mode because the camera automatically adjusts them to the optimal setting.
  – [INTELLIGENT ISO]/[SENSITIVITY]/[I.EXPOSURE]/[MIN. SHTR SPEED]/[I.RESOLUTION]/[COLOR MODE]
- Shutter speed for Scene Modes, except [PANORAMA ASSIST], [SPORTS], [NIGHT PORTRAIT], [NIGHT SCENERY], [CANDLE LIGHT], [BABY1]/[BABY2], [PET], [FLASH BURST], [STARRY SKY], [FIREWORKS], [SNOW] and [HIGH DYNAMIC], will be from 1/4th of a second to 1/2000th of a second.

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[PORTRAIT]

When taking pictures of people outdoors during the day, this mode allows you to improve the appearance of the persons concerned and make their skin tones look healthier.

■ **Technique for Portrait Mode**

To make this mode more effective:

❶ Rotate the zoom lever as far as possible to Tele.

❷ Move close to the subject to make this mode more effective.

Note

• The initial setting for [AF MODE] is [].

[SOFT SKIN]

When taking pictures of people outdoors during the daytime, this mode enables the texture of their skin to appear even softer than with [PORTRAIT]. (It is effective when taking pictures of people from the chest up.)

■ **Technique for Soft Skin Mode**

To make this mode more effective:

❶ Rotate the zoom lever as far as possible to Tele.

❷ Move close to the subject to make this mode more effective.

Note

• If a part of the background etc. is a colour close to skin colour, this part is also smoothed.
• This mode may not be effective when there is insufficient brightness.
• The initial setting for [AF MODE] is [].

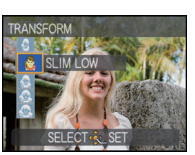
[TRANSFORM]

Subject can be recorded either slim or stretched, and at the same time, skin can be recorded smoothly.

1 Press ▲/▼ to select the setting, and then press [MENU/SET].

• It can be set from the Quick Menu (P24).

2 Take pictures.



Note

• [PICTURE SIZE] and [ASPECT RATIO] are fixed as given below:
– [3M] for [4:3], [2.5M] for [3:2] and [2M] for [16:9]
• [QUALITY] is automatically fixed to [].
• You can take pictures suitable for 4″×6″/10×15 cm printing.
• The initial setting for [AF MODE] is [].
• When [SLIM HIGH] or [STRETCH HIGH] is set, Face Recognition may not function fully.
• It cannot be used without notifying the copyright owner, except for personal use.
• Do not use the material against the public order and morals, or to offend someone.
• Do not use the material against the object's interest.

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[SELF PORTRAIT]

Select this to take pictures of yourself.

■ Technique for Self Portrait Mode

- Press the shutter button halfway to focus. The self-timer indicator lights up when you are brought into focus. Making sure you hold the camera still, press the shutter button fully to take the picture.
- The subject is not focused when the self-timer indicator is blinking. Make sure to press the shutter button halfway again to focus.
- The recorded picture automatically appears on the LCD monitor for reviewing.
- If the picture is blurry due to the slow shutter speed, we recommend using the 2 second self-timer.

Note

- The focus range is about 30 cm (0.99 feet) to 1.2 m (3.94 feet) (Wide).
- You can record yourself with audio (P110). If you do this, the self-timer indicator will light up while recording the audio.
- The Zoom Magnification is automatically moved to Wide (1×).
- The self-timer can only be set to off or 2 seconds. If it is set to 2 seconds, this setting will remain until the camera is turned off, the Scene Mode is changed or [REC] Mode or [PLAYBACK] Mode is selected.
- The Stabilizer Function Mode is fixed to [MODE2]. (P109)
- The initial setting for [AF MODE] is [👤].

[SCENERY]

This allows you to take pictures of a wide landscape.

Note

- **The flash setting is fixed to [⊘].**
- The focus range is 5 m (16.4 feet) to ∞.

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[PANORAMA ASSIST]

You can take pictures with connections suitable for creating panorama images.

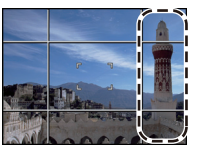
■ **Setting the recording direction**

1 **Press ▲/▼ to select the recording direction and then press [MENU/SET].**

• The horizontal/vertical guideline will be displayed.

2 **Take the picture.**

• You can retake the picture by selecting [RETAKE].

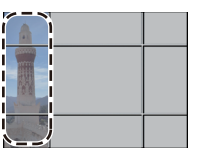


3 **Press ▲ to select [NEXT] and then press [MENU/SET].**

• You can also press the shutter button halfway to set the menu.
• Part of the recorded image is displayed as a transparent image.

4 **Take picture after moving the camera horizontally or vertically so the transparent image overlaps.**

• When taking the third and later pictures, repeat steps **3** and **4**.
• You can retake the picture by selecting [RETAKE].



5 **Press ▲/▼ to select [EXIT] and then press [MENU/SET].**

Note

- **It will be a normal motion picture recording during the motion picture recording.**
- **The flash setting is fixed to [⚡ˢ].**
- The focus, zoom, exposure, White Balance, shutter speed and ISO sensitivity are fixed to the settings for the first picture.
- We recommend using a tripod. When it is dark, we recommend using the self-timer for taking pictures.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 8 seconds.
- The shutter may remain closed (max. about 8 sec.) after taking the picture because of signal processing. This is not a malfunction.
- The recorded images can be combined into panorama pictures using the software “PHOTOfunSTUDIO 5.0 HD Edition” on the CD-ROM (supplied).

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[SPORTS]

Set here when you want to take pictures of sports scenes or other fast-moving events.

Note

- **It will be a normal motion picture recording during the motion picture recording.**
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 1 second.
- This mode is suitable for taking pictures of subjects at distances of 5 m (16.4 feet) or more.
- [INTELLIGENT ISO] is activated, and maximum ISO sensitivity level becomes [ISO1600].

[NIGHT PORTRAIT]

This allows you to take pictures of a person and the background with near real-life brightness.

■ Technique for Night Portrait Mode

- **Use the flash. (You can set to [ ].)**
- Ask the subject not to move while taking a picture.
- We recommend rotating the zoom lever to Wide (1×) and being about 1.5 m (4.92 feet) from the subject when taking a picture.

Note

- **During motion picture recording, low light settings [ ] are used, which will provide better pictures in dimly lit rooms or at nightfall.**
- The focus range is 60 cm (1.97 feet) (Wide)/1.2 m (3.94 feet) (Tele) to 5 m (16.4 feet).
- We recommend using a tripod and the self-timer for taking pictures.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 8 seconds.
- The shutter may remain closed (max. about 8 sec.) after taking the picture because of signal processing. This is not a malfunction.
- Noise may become visible when you take pictures in dark places.
- The initial setting for [AF MODE] is [ ].

[NIGHT SCENERY]

This allows you to take vivid pictures of the nightscape.

Note

- **During motion picture recording, low light settings [ ] are used, which will provide better pictures in dimly lit rooms or at nightfall.**
- **The flash setting is fixed to [ ].**
- The focus range is 5 m (16.4 feet) to ∞.
- We recommend using a tripod and the self-timer for taking pictures.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 8 seconds.
- The shutter may remain closed (max. about 8 sec.) after taking the picture because of signal processing. This is not a malfunction.
- Noise may become visible when you take pictures in dark places.

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[FOOD]

This mode allows you to take pictures of food with a natural hue without being affected by the ambient light in restaurants etc.

Note

- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

[PARTY]

Select this mode when you want to take pictures at a wedding reception or an indoor party etc. This allows you to take pictures of people and the background with near real-life brightness.

■ Technique for Party Mode

- **Use the flash. (You can set to [ⓈⓄ] or [Ⓞ].)**
- We recommend using a tripod and the self-timer for taking pictures.
- We recommend rotating the zoom lever to Wide (1×) and being about 1.5 m (4.92 feet) from the subject when taking pictures.

Note

- The initial setting for [AF MODE] is [].

[CANDLE LIGHT]

This mode allows you to take pictures with a candle-lit atmosphere.

■ Technique for Candle Light Mode

- This is more effective when taking pictures without using the flash.

Note

- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- We recommend using a tripod and the self-timer for taking pictures.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 1 second.
- The initial setting for [AF MODE] is [].

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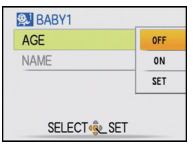
[BABY1]/[BABY2]

This takes pictures of a baby with a healthy complexion. When you use the flash, the light from it is weaker than usual.
It is possible to set different birthdays and names for [BABY1] and [BABY2]. You can select to have these appear at the time of playback, or have them stamped on the recorded image using [TEXT STAMP] (P131).

■ **Birthday/Name setting**

1 **Press ▲/▼ to select [AGE] or [NAME] and then press ►.**
2 **Press ▲/▼ to select [SET] and then press [MENU/SET].**
3 **Enter the birthday or name.**



Birthday: ◄/►: Select the items (year/month/day).
▲/▼: Setting.
[MENU/SET]: Exit.

Name: For details on how to enter characters, refer to “Entering Text” on P117.

- When the birthday or name is set, [AGE] or [NAME] is automatically set to [ON].
- If [ON] is selected when the birthday or name has not been registered, the setting screen appears automatically.

4 **Press [MENU/SET] to finish.**

■ **To cancel [AGE] and [NAME]**

Select the [OFF] setting in step **2** of the “Birthday/Name setting” procedure.

Note

- **During motion picture recording, settings for [PORTRAIT] are used.**
- The age and name can be printed out using the “PHOTOfunSTUDIO 5.0 HD Edition” bundled software on the CD-ROM (supplied).
- If [AGE] or [NAME] is set to [OFF] even when the birthday or name has been set, the age or name will not be displayed. Before taking pictures, set [AGE] or [NAME] to [ON].
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 1 second.
- [INTELLIGENT ISO] is activated, and maximum ISO sensitivity level becomes [ISO1600].
- If the camera is turned on with [BABY1]/[BABY2] set, the age and name are displayed at the lower left of the screen for about 5 seconds, along with the current date and time.
- If the age is not properly displayed, check the clock and birthday settings.
- The birthday setting and name setting can be reset with [RESET].
- The initial setting for [AF MODE] is [].

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[PET]

Select this mode when you want to take pictures of a pet such as a dog or a cat.
You can set your pet's birthday and name. You can select to have these appear at the time of playback, or have them stamped on the recorded image using [TEXT STAMP] (P131).

For information about [AGE] or [NAME], refer to [BABY1]/[BABY2] on P68.

Note

- **It will be a normal motion picture recording during the motion picture recording.**
- The initial setting for the AF Assist Lamp is [OFF].
- The initial setting for [AF MODE] is [ ].
- Refer to [BABY1]/[BABY2] for other information about this mode.

[SUNSET]

Select this mode when you want to take pictures of a sunset view. This allows you to take vivid pictures of the red colour of the sun.

Note

- **The flash setting is fixed to [ ].**

[HIGH SENS.]

This mode minimises the jitter of the subjects, and enables you to take pictures of these subjects in dimly lit rooms. (Select this for high-sensitivity processing. The sensitivity automatically switches to between [ISO1600] and [ISO6400].)

■ Picture size and aspect ratio

1 Press ▲/▼ to select the picture size and aspect ratio and then press [MENU/SET] to set.

- 3M (4:3), 2.5M (3:2) or 2M (16:9) is selected as the picture size.

2 Take pictures.

Note

- [I.RESOLUTION] is fixed to [ON].
- [QUALITY] is automatically fixed to [ ].
- You can take pictures suitable for 4″×6″/10×15 cm printing.
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

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[HI-SPEED BURST]

This is a convenient mode for shooting rapid movement or a decisive moment.

■ **Picture size and aspect ratio**

1 Press ▲/▼ to select [SPEED PRIORITY] or [IMAGE PRIORITY] and then press [MENU/SET] to set.

2 Press ▲/▼ to select the picture size and aspect ratio and then press [MENU/SET] to set.

• 3M (4:3), 2.5M (3:2) or 2M (16:9) is selected as the picture size.

3 Take pictures.

• Still pictures are taken continuously while the shutter button is pressed fully.

Maximum Burst speed	approx. 10 pictures/second (Speed priority) approx. 6 pictures/second (Image priority)
Number of recordable pictures	approx. 15 to 100

• The Burst speed changes according to the recording conditions.
• The number of Burst recording pictures are limited by the picture-taking conditions and the type and/or status of the card used.
• The number of Burst recording pictures increases immediately after formatting.

Note

• It will be a normal motion picture recording during the motion picture recording.
• The flash setting is fixed to [⊗].
• [I.RESOLUTION] is fixed to [ON].
• [QUALITY] is automatically fixed to [▂▃▅].
• You can take pictures suitable for 4″×6″/10×15 cm printing.
• The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
• The focus, zoom, exposure, White Balance, shutter speed and ISO sensitivity are fixed to the settings for the first picture.
• The ISO sensitivity is automatically adjusted. Note, however, that the ISO sensitivity is set high to achieve a high shutter speed.
• Depending on the operating conditions, it may take time to take the next picture if you repeat taking a picture.

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[FLASH BURST]

Still pictures are taken continuously with flash. It is convenient to take continuous still pictures in dark places.

■ **Picture size and aspect ratio**

1 Press ▲/▼ to select the picture size and aspect ratio and then press [MENU/SET] to set.

• 3M (4:3), 2.5M (3:2) or 2M (16:9) is selected as the picture size.

2 Take pictures.

• Still pictures are taken continuously while the shutter button is pressed fully.

Number of recordable pictures	max. 5 pictures

Note

- **It will be a normal motion picture recording during the motion picture recording.**
- [I.RESOLUTION] is fixed to [OFF].
- [QUALITY] is automatically fixed to [▂▃▅].
- You can take pictures suitable for 4″×6″/10×15 cm printing.
- The shutter speed becomes 1/30th of a second to 1/2000th of a second.
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- The focus, zoom, exposure, shutter speed, ISO sensitivity, and flash level are fixed to the settings for the first picture.
- [INTELLIGENT ISO] is activated, and maximum ISO sensitivity level becomes [ISO3200].
- See the Note on P55 when using the flash.

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[STARRY SKY]

This allows you to take vivid pictures of a starry sky or a dark subject.

■ Setting the shutter speed

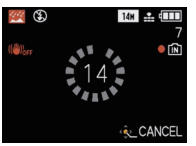
Select a shutter speed of [15 SEC.], [30 SEC.] or [60 SEC.].

1 Press ▲/▼ to select the number of seconds and then press [MENU/SET].

- It is also possible to change the number of seconds using the Quick Menu. (P24)

2 Take pictures.

- Press the shutter button fully to display the countdown screen. Do not move the camera after this screen is displayed. When countdown finishes, [PLEASE WAIT...] is displayed for the same length of time as the set shutter speed for signal processing.
- Press [MENU/SET] to stop taking the picture while the countdown screen is displayed.



■ Technique for Starry Sky Mode

- The shutter opens for 15, 30 or 60 seconds. Be sure to use a tripod. We also recommend taking pictures with the self-timer.

Note

- **During motion picture recording, low light settings [ ] are used, which will provide better pictures in dimly lit rooms or at nightfall.**
- **The flash setting is fixed to [⊗].**
- The Optical Image Stabilizer function is fixed to [OFF].
- ISO sensitivity is fixed to [ISO80].

[FIREWORKS]

This mode allows you to take beautiful pictures of fireworks exploding in the night sky.

■ Technique for Fireworks Mode

- Since the shutter speed becomes slower, we recommend using a tripod.

Note

- **It will be a normal motion picture recording during the motion picture recording.**
- **The flash setting is fixed to [⊗].**
- This mode is most effective when the subject is 10 m (32.8 feet) or more away.
- The shutter speed becomes the following.
  - When [OFF] is set on the Optical Image Stabilizer function: 2 seconds
  - When [AUTO], [MODE1] or [MODE2] is set on the Optical Image Stabilizer function: 1/4th of a second or 2 seconds (The shutter speed becomes 2 seconds only when the camera has determined that there is little jitter such as when using a tripod etc.)
  - You can change the shutter speed by compensating for the exposure.
- ISO sensitivity is fixed to [ISO80].

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[BEACH]

This allows you to take even more vivid pictures of the blue colour of the sea, sky etc. It also prevents underexposure of people under strong sunlight.

Note

- The initial setting for [AF MODE] is [].
- Do not touch the camera with wet hands.
- Sand or seawater will cause the camera to malfunction. Make sure that sand or seawater does not get into the lens or the terminals.

[SNOW]

This allows you to take pictures that show the snow as white as possible at a ski resort or a snow-covered mountain.

[AERIAL PHOTO]

This mode allows you to take pictures through an airplane window.

■ Technique for Aerial Photo Mode

- We recommend using this technique if it is difficult to focus when taking pictures of clouds etc. Aim the camera at something with high contrast, press the shutter button halfway to fix the focus and then aim the camera at the subject and press the shutter button fully to take the picture.

Note

- **The flash setting is fixed to [].**
- The focus range is 5 m (16.4 feet) to ∞.
- **Turn the camera off when taking off or landing.**
- **When using the camera, follow all instructions from the cabin crew.**
- Be careful about the reflection from the window.

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[PIN HOLE]

Picture is taken darker and with soft focus around the subjects.

Note
- [I.RESOLUTION] is fixed to [OFF].
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- Face Detection (P102) may not operate normally in the dark areas around the edges of the screen.

[FILM GRAIN]

Picture is taken with a grainy texture as though blasted with sand.

Note
- ISO sensitivity is fixed to [ISO1600].
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

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[HIGH DYNAMIC]

You can use this mode to easily record pictures in which bright and dark regions of the scene are expressed with suitable brightness when looking into the sun, at night, or in similar circumstances.

■ **Setting the effect**

1 Press ▲/▼ to select the effect to use, and then press [MENU/SET].

• It can be set from the Quick Menu (P24).

[STD]: Natural colour effect

[ART]: Eye-catching effect which emphasises contrast and colour

[B&W]: Black and white effect

2 Take pictures.

Note

- ISO sensitivity is fixed to [ISO400].
- Compensation effect may not be achieved depending on the conditions.
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.
- When it is dark, we recommend using a tripod and the self-timer for taking pictures.
- When the camera is set to [STABILIZER] and there is very little jitter, or if [STABILIZER] is set to [OFF], shutter speed may slow down up to 8 seconds.
- The shutter may remain closed (max. about 8 sec.) after taking the picture because of signal processing. This is not a malfunction.
- LCD screen noise may be more visible than during normal recording due to brightness compensation of the darker areas.

[PHOTO FRAME]

Record the image with a frame around it.

■ **Setting the frame**

1 Press ◄/► to select the frame to use, and then press [MENU/SET].

• The number of pixels is fixed to 2M (4:3).

2 Take pictures.

Note

- **It will be a normal motion picture recording during the motion picture recording. Frame will not be displayed.**
- [AUTO REVIEW] is fixed to [2SEC.].
- The colour of the frame displayed on the screen and the colour of the frame around the actual image may differ, but this is not a malfunction.

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[UNDERWATER]

Use the marine case (DMW-MCZX3; optional). This allows you to take pictures with a natural colour.

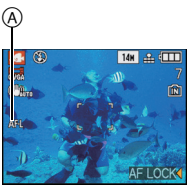
Fixing the focus underwater (AF Lock)

You can fix the focus before taking a picture with AF Lock. This is useful if you want to take pictures of a fast moving subject etc.

1 Aim the AF area at the subject.

2 Press ◄ to fix the focus.

- The AF Lock icon Ⓐ appears when the subject is focused.
- Press ◄ again to cancel AF Lock.
- When you rotate the zoom lever, the AF Lock is cancelled. In this case, focus on the subject and fix the focus again.
- You cannot set to AF Lock when [AF MODE] is set to [ ].



White Balance fine adjustment

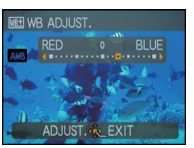
You can adjust the hue to match the water depth and the weather.

1 Press ▲ [ ] three times to display [WB ADJUST.].

2 Press ◄/► to adjust the White Balance.

◄ [RED]: Press when the hue is bluish.
► [BLUE]: Press when the hue is reddish.

- Select [0] if you do not want to finely adjust the White Balance.



3 Press [MENU/SET] to close the menu.

- If you adjust the White Balance, [AWB] appears on the screen in red or blue.

Note

- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

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[REC] Mode: iA MS1 MS2 SCN

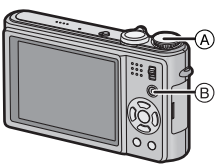
Recording Motion Picture

This can record high definition motion pictures compatible with the AVCHD format or motion pictures recorded in Motion JPEG.
Audio will be recorded in monaural.

1 Slide the [REC]/[PLAYBACK] selector switch to [📷].

2 Switching the mode by rotating the Mode dial.

Ⓐ Mode dial
Ⓑ Motion picture button



■ **Modes that can be recorded for motion picture**

Item	Settings/Note
iA **Intelligent Auto Mode**	The camera will set the most appropriate settings to match the subject and the recording conditions, so you can leave the settings to the camera and take motion pictures easily.
Normal picture mode	Record motion pictures by automatically setting aperture and shutter speed.
MS1 MS2 SCN **My Scene Mode/ Scene Mode**	Scene motion picture

Note

• It will be recorded in following categories for certain scene modes.

Selected scene mode	Scene mode while recording motion picture
[BABY1]/[BABY2]	Portrait mode
[NIGHT PORTRAIT], [NIGHT SCENERY], [STARRY SKY]	Low light mode
[PANORAMA ASSIST], [SPORTS], [PET], [HI-SPEED BURST], [FLASH BURST], [FIREWORKS], [PHOTO FRAME]	Normal motion picture

• A motion picture recording matching each scene will be performed for the ones not listed above. (P61 to 76)

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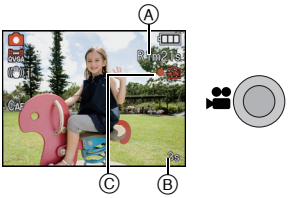
3 Start recording by pressing the motion picture button.



Ⓐ Available recording time
Ⓑ Elapsed recording time

- Release the motion picture button right after you press it.
- The audio is also recorded simultaneously from the built-in microphone on this unit. (Motion pictures cannot be recorded without audio.)
- The recording state indicator (red) Ⓒ will flash while recording motion pictures.
- The screen will become dark momentarily, and recording will start after adjusting the display.

4 Stop the recording by pressing the motion picture button again.

- Sound will go off when pressing the motion picture button indicating start/stop of motion picture recording.
  Sound volume can be set in [BEEP LEVEL] (P25).
- If the built-in memory or the card becomes full in the middle of recording, the camera stops recording automatically.

■ About focusing

When [CONTINUOUS AF] (P112) is set to [ON], and you focus on a subject, the camera will maintain focus on that subject. To fix the focus position when beginning to record a motion picture, set to [OFF].

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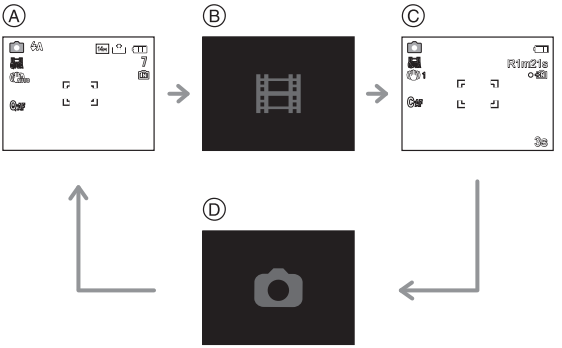
Note

• The screen will change as following when the motion picture button is pressed in steps **3** and **4**.

Ⓐ Still picture recording screen*1
Ⓑ Motion picture mode setting*2
Ⓒ Motion picture recording screen
Ⓓ Still picture mode setting



*1 Press [DISPLAY] to display the available recording time before recording motion pictures.
*2 The screen that is displayed during Motion Picture Mode setting is different depending on the setting of the [REC MODE].

• **Refer to P112 for the [MOTION PICTURE] Mode menu.**
• **The flash setting is fixed to [⊗].**
• Refer to P184 for information about the available recording time.
• The available recording time displayed on the screen may not decrease regularly.
• Depending on the type of the card, the card access indication may appear for a while after recording motion pictures. This is not a malfunction.
• The operational sound of the zoom or button operation may be recorded when it is operated during the recording of a motion picture.
• The screen may be blacked out momentarily, or the unit may record noise due to static electricity or electromagnetic waves etc. depending on the environment of the motion picture recording.
• When operating the zoom in recording motion pictures, it may take time to come into focus.
• If the Extra Optical Zoom was used before pressing the motion picture button, recordable area will be changed drastically since these settings are cancelled.
• When the aspect ratio setting is different in still and motion pictures, the angle of view changes at the start of motion picture recording. When [REC AREA] (P26) is set to [ON], angle of view during motion picture recording is displayed.
• [STABILIZER] is fixed to [MODE1] in recording motion pictures.
• In recording motion pictures, the following functions cannot be used.
– [], [], [] and [] in [AF MODE]
– Direction Detection function
– Extra Optical Zoom
– [FACE RECOG.]
• It is recommended to use a fully charged battery or AC adaptor (optional) when recording motion pictures.
• If while recording motion pictures using the AC adaptor (optional) the power supply is cut off due to a power cut or if the AC adaptor (optional) is disconnected etc., the motion picture being recorded will not be recorded.
• Zoom speed may be slower than normal.

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When set to Intelligent Auto Mode

• When Intelligent Auto Mode is selected in step **2**, motion picture recording matching to the subject or recording situation can be performed.

■ **Scene Detection**

When the camera identifies the optimum scene, the icon of the scene concerned is displayed in blue for 2 seconds, after which its colour changes to the usual red.

iA →	[i-PORTRAIT]
	[i-SCENERY]
	[i-LOW LIGHT]
	[i-MACRO]

• [iA] is set if none of the scenes are applicable, and the standard settings are set.
• When [ ] is selected, the camera automatically detects a person's face, and it will adjust the focus and exposure. **(Face Detection)** (P102)

Note

• Refer to P37 for settings in Intelligent Auto Mode.
• Due to conditions such as the ones below, a different scene may be identified for the same subject.
– Subject conditions: When the face is bright or dark, the size of the subject, the colour of the subject, the distance to the subject, the contrast of the subject, when the subject is moving
– Recording conditions: Sunset, sunrise, under low brightness conditions, when the camera is shaken, when zoom is used
• To take pictures in an intended scene, it is recommended that you take pictures in the appropriate Recording Mode.

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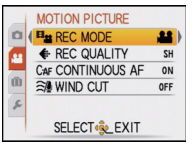
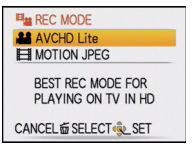
Changing [REC MODE] and [REC QUALITY]

1 **Select [REC MODE] from the [MOTION PICTURE] Mode menu, and press ►. (P22)**



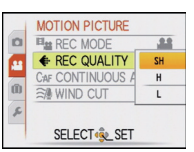
2 **Press ▲/▼ to select the item and then press [MENU/SET].**



Recording format	Features
[AVCHD Lite]	• Select this format to record HD (high definition) video for playback on your HDTV using an HDMI connection. • It can be played back as is by inserting the card into a device compatible with AVCHD. Refer to the instructions of the device used for details on compatibility. • Use a card with SD Speed Class* with “Class 4” or higher.
[MOTION JPEG]	• Select this format to record standard definition video for playback on your PC. It can be recorded using less storage when there is not much space left on the memory card or when you want to attach the motion picture to an e-mail. • Use a card with SD Speed Class* with “Class 6” or higher.

*The SD Speed Class Rating is the speed standard for successive writes.

3 **Press ▲/▼ to select [REC QUALITY] and then press ►.**



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4 Press ▲/▼ to select the item and then press [MENU/SET].

When [AVCHD Lite] is selected in step 2

	Item	Quality (bit rate)*1	fps	Aspect ratio
High quality ↓ ↑ Longer time	([SH])	1280×720 pixels Approx. 17 Mbps*2	50p (Sensor output is 25 fps)	16:9
	([H])	1280×720 pixels Approx. 13 Mbps*2		
	([L])	1280×720 pixels Approx. 9 Mbps*2		

*1 What is bit rate
This is the volume of data for a definite period of time, and the quality becomes higher when the number gets bigger. This unit is using the “VBR” recording method. “VBR” is an abbreviation of “Variable Bit Rate”, and the bit rate (volume of data for definite period of time) is changed automatically depending on the subject to record. Therefore, the recording time is shortened when a subject with fast movement is recorded.

*2 What is Mbps
This is an abbreviation of “Megabit Per Second”, and it represents the speed of transmission.

When [MOTION JPEG] is selected in step 2

	Item	Picture size	fps	Aspect ratio
High quality ↓ ↑ Longer time	([HD])	1280×720 pixels	30	16:9
	*3([WVGA])	848×480 pixels		
	([VGA])	640×480 pixels		4:3
	([QVGA])	320×240 pixels		

*3 This item cannot be set in the Intelligent Auto Mode.

- With the [AVCHD Lite] or [] for [MOTION JPEG], high quality motion picture can be enjoyed on the TV by using the HDMI mini cable (optional). For details, see “Playing back on the TV with HDMI socket” on P145.
- It cannot be recorded to built-in memory except for the [].

5 Press [MENU/SET] to close the menu.

- You can also press the shutter button halfway to close the menu.

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Note

- The motion picture recording may stop in the middle when any of the following cards are used.
  – Cards on which recording and deleting have been repeated many times
  – Cards which have been formatted using a PC or other equipment
  Before taking pictures, format (P30) the card in the unit. Because formatting will delete all data recorded on the card, save important data beforehand on the computer.
- **Motion pictures recorded in [AVCHD Lite] or [MOTION JPEG] may be played back with poor picture or sound quality or playback may not be possible even when played back with equipment compatible with these formats. Also, the recording information may not be displayed properly. In this case, use this unit.**
  For details on AVCHD compatible devices, refer to the support sites below.
  http://panasonic.jp/support/global/cs/dsc/
  (This Site is English only.)
- Motion picture recorded in [AVCHD Lite] does not comply with the “DCF/Exif”, so some information will not display while playback.
- **Sound from motion pictures (When [REC MODE] is set to [MOTION JPEG]) or pictures with audio recorded by this camera cannot be played back by older models of Panasonic digital camera (LUMIX) launched before July 2008.**

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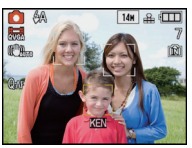
[REC] Mode: iA MS1 MS2 SCN

Taking a Picture with Face Recognition Function

Face Recognition is a function which finds a face resembling a registered face and prioritizes focus and exposure automatically. Even if the person is located towards the back or on the end of a line in a group photo, the camera can still take a clear picture.

[FACE RECOG.] is initially set to [OFF] on the camera.
[FACE RECOG.] will turn [ON] automatically when the face image is registered.



- **The Face Recognition function includes the following.**
  In Recording Mode
  – Display of corresponding name when camera detects a registered face* (if name has been set for the registered face)
  – The camera will remember the face that has been photographed many times and display the registration screen automatically (if [AUTO REGISTRATION] is set to [ON])

  In Playback Mode
  – Display of name and age (if information has been registered)
  – Selective playback of pictures chosen from pictures registered with Face Recognition ([CATEGORY PLAY] (P123))

  * Names of up to 3 people are displayed. Precedence for the names displayed when taking pictures is determined according to the order of registration.

Note

- [AF MODE] is fixed to [👤].
- During the Burst Mode, [FACE RECOG.] picture information can be attached to only the first picture.
- After pressing the shutter halfway down, a different person's picture information may be added when the camera is turned to a different subject to photograph.
- [FACE RECOG.] can be used in the following Scene Modes.
  – [PORTRAIT]/[SOFT SKIN]/[SELF PORTRAIT]*/[SCENERY]/[SPORTS]/[NIGHT PORTRAIT]/[PARTY]/[CANDLE LIGHT]/[BABY1]/[BABY2]/[PET]/[SUNSET]/[HIGH SENS.]/[BEACH]/[SNOW]/[PIN HOLE]/[HIGH DYNAMIC]/[PHOTO FRAME]
  * [AUTO REGISTRATION] is fixed to [OFF].
- [FACE RECOG.] will find a face similar to the registered face, and does not guarantee secure recognition of a person.
- Face Recognition may take more time to select and recognise distinctive facial features than regular Face Detection.
- Even when Face Recognition information has been registered, pictures taken with [NAME] set to [OFF] will not be categorised by Face Recognition in [CATEGORY PLAY].
- Even when Face Recognition information is changed (P88), Face Recognition information for the pictures already taken will not be changed.
  For instance, if the name is changed, pictures recorded before the change will not be categorised by Face Recognition in [CATEGORY PLAY].
- To change the name information of the pictures taken, perform the [REPLACE] in [FACE REC EDIT] (P142).

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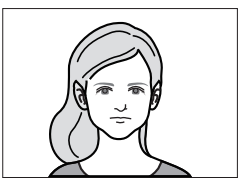
Face Settings

You can register information such as names and birthdays for face images of up to 6 people.
Registration can be facilitated by taking multiple face images of each person. (up to 3 pictures/registration)

■ Point of recording when registering the face images

- Face front with eyes open and mouth closed, making sure the outline of the face, the eyes, or the eyebrows are not covered with the hair when registering.
- Make sure there is no extreme shading on the face when registering. (Flash will not flash during registration.)

(Good example for registering)



■ When it is not recognising during recording

- Register the face of same person indoors and outdoors, or with different expressions or angles. (P88)
- Additionally register at the location of recording.
- Changing the [SENSITIVITY] setting. (P89)
- When a person who is registered is not recognised, correct by re-registering.

Example of faces that are hard to recognise

Face Recognition may not be possible or may not recognise faces correctly even for registered faces in the following instances, depending on the facial expression and environment.

- Hair is covering the eyes or the eyebrows (Ⓐ)
- The face is dark/the light is at an angle (Ⓑ)
- The face is facing on angle or sideways
- The face is facing upward/downward
- The eyes are closed
- When the face is extremely bright or dark
- Hidden by sunglasses, glasses reflecting light, hair, hat, etc.
- When the face appears small on the screen
- The entire face is not in the screen
- When distinctive facial features have changed with age
- When parents and children or siblings closely resemble one another
- Facial expression is very different
- When there is little contrast on the faces
- When there is rapid movement
- When the camera is shaking
- When Digital Zoom is used

Ⓐ

Ⓑ

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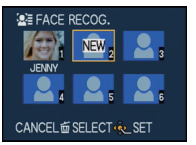
Registering face image of new person

1 **Select [FACE RECOG.] on the [REC] Mode menu and then press ►. (P22)**

2 **Press ▲/▼ to select [MEMORY] and then press [MENU/SET].**

3 **Press ▲/▼/◄/► to select the Face Recognition frame that is not registered, and then press [MENU/SET].**



4 **Take the picture adjusting the face with the guide.**

- The faces of subjects other than people (pets, etc.) cannot be registered.
- When recognition fails, a message will appear and the display will return to the recording screen. In this case, try taking the picture again.

5 **Press ▲ to select [YES] and then press [MENU/SET].**

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6 Select item to edit with ▲/▼, and then press ►.

• You can register up to 3 face images.

Item	Description of settings
[NAME]	It is possible to register names. **1 Press ▼ to select [SET] and then press [MENU/SET].** **2 Enter the name.** • For details on how to enter characters, refer to “Entering Text” section on P117.
[AGE]	It is possible to register the birthday. **1 Press ▼ to select [SET] and then press [MENU/SET].** **2 Press ◄/► to select the items (Year/Month/Day), and then press ▲/▼ to set and then press [MENU/SET].**
[FOCUS ICON]	Change the displayed focus icon when the subject is focused. **Press ▲/▼ to select the focus icon, and then press [MENU/SET].**
[ADD IMAGES]	To add additional face images. **(Add Images)** **1 Select the unregistered face recognition frame, and then press [MENU/SET]** **2 Perform steps 4 and 5 in “Registering face image of new person”.** **3 Press [🗑].**
	To delete one of the face images. **(Delete)** **1 Press ◄/► to select the face image to delete, and then press [MENU/SET].** **2 Press ▲ to select [YES] and then press [MENU/SET].** **3 Press [🗑].** • If there is only one image registered, it cannot be deleted.

7 Press the shutter button halfway to close the menu.

■ About the information

• When [DISPLAY] is pressed on the recording screen described in step **4** on P86, an explanation appears for taking face images. (Press again to return to the recording screen.)

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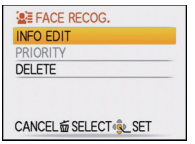
Change or delete the information for a registered person

You can modify the pictures or information of an already registered person. You can also delete the information of the registered person.

1 **Select [FACE RECOG.] from the [REC] Mode menu, and then press ►. (P22)**
2 **Press ▼ to select [MEMORY] and press [MENU/SET].**
3 **Press ▲/▼/◄/► to select the face image to edit or delete and then press [MENU/SET].**
4 **Press ▲/▼ to select the item and then press [MENU/SET].**



Item	Description of settings
[INFO EDIT]	Changing the information of an already registered person. **Perform step 6 in "Registering face image of new person".**
[PRIORITY]	The focus and exposure are preferentially adjusted for higher-priority faces. **Press ▲/▼/◄/► to select the priority and then press [MENU/SET].**
[DELETE]	Deleting information of a registered person. **Press ▲ to select [YES] and then press [MENU/SET].**

5 **Press the shutter button halfway to close the menu.**

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Setting Auto Registration/Sensitivity

Setting of Auto Registration and Sensitivity for Face Recognition can be done.

1 Select [FACE RECOG.] from the [REC] Mode menu, and then press ►. (P22)

2 Press ▼ to select [SET] and then press [MENU/SET].

3 Press ▲/▼ to select the item and then press ►.

Item	Description of settings
[AUTO REGISTRATION]	**[OFF]/[ON]** • When the [AUTO REGISTRATION] is set to [ON], [FACE RECOG.] will be set to [ON] automatically. • For details, see "Auto Registration" on P90.
[SENSITIVITY]	**[HIGH]/[NORMAL]/[LOW]** • Select [HIGH] when recognition proves to be difficult. The likelihood of recognition increases, but so does the likelihood of mistaken recognition. • Select [LOW] when mistaken recognition happens frequently. • To return to the original settings, select [NORMAL].

4 Press the shutter button halfway to close the menu.

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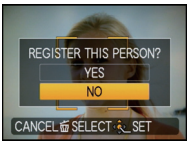
Auto Registration

When [AUTO REGISTRATION] is set to [ON], the registration screen will display automatically after taking a picture of a face that has a high number of appearances.
- Registration screen is displayed after approximately 3 pictures. (It is not counted when [BURST] and Auto Bracket is set.)
- It may be extremely hard to recognise only with [AUTO REGISTRATION], so register the face images with [FACE RECOG.] in the [REC] Mode menu beforehand.

■ Registering from the automatic registration screen

1 Press ▲ to select [YES] and then press [MENU/SET].
- If there are no registered persons, proceed to step **3**.
- Selection screen is displayed again when [NO] is selected, and when [YES] is selected with ▲, [AUTO REGISTRATION] will be set to [OFF].



2 Press ▲/▼ to select [NEW PERSON] or [ADDITIONAL IMAGE] and then press [MENU/SET].

Item	Description of settings
[NEW PERSON]	• A list of registered people is displayed when there are 6 people already registered. Select the person to be replaced.
[ADDITIONAL IMAGE]	To additionally register a face image for a registered person. **Press ▲/▼/◄/► to select the person to whom you wish add the picture, and then press [MENU/SET].** • If 3 images have already been registered, the picture replacement screen will appear. In this case, select the picture you wish to replace.

- After additionally registering or changing a face image, the screen returns automatically to the recording screen.

3 Perform the operation in Step 6 and following in "Registering face image of new person".

Note
- If the registration screen will not display, it may display easier by recording in the same conditions or with the same expressions.
- If a face is not recognised even though it is registered, it will make the recognition easier by registering the person again using the [FACE RECOG.] in the [REC] Mode menu in that environment.
- If the registration screen is displayed for a person that is already registered, it will make the recognition easier by additionally registering.
- It may make recognition harder when a picture recorded with flash is registered.

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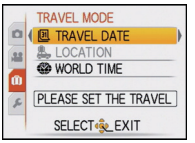
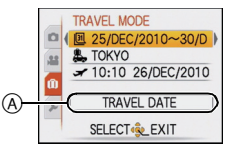
Useful Functions at Travel Destinations (Travel Mode)

• **Select [CLOCK SET] to set the current date and time in advance.** (P18)

Select an item from the [TRAVEL MODE] menu, and press ► (P22).



• On completion, the set content is displayed.
Ⓐ The name of the selected menu item is displayed.



[TRAVEL DATE]

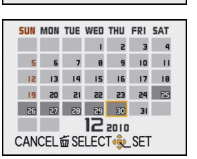
Set the departure date and return date of your vacation. The number of days which have passed since the departure date (i.e. what day of the vacation it is) is then recorded when you take pictures and can be displayed at playback. You can stamp your pictures with this information using [TEXT STAMP] (P131).

[OFF]/[SET]

■ Setting the travel date

1 Press ▼ to select [SET] and then press [MENU/SET].
2 Press ▲/▼/◄/► to set the departure date, and then press [MENU/SET].

3 Press ▲/▼/◄/► to set the return date, and then press [MENU/SET].
• The frames of dates from the departure date to the return date undergo a colour change.
4 Press [MENU/SET] to close the menu.
• The departure date and return date you have set appear in the [TRAVEL MODE] menu.



■ Cancelling the travel date

These settings are cancelled automatically when the current date passes the return date. To cancel the settings part-way through your vacation, set [TRAVEL DATE] to [OFF] in Step **1** of “Setting the travel date”. Note that when [TRAVEL DATE] is [OFF], [LOCATION] is also set to [OFF] automatically.

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Note

- The number of days that have passed since the departure date can be printed out using the "PHOTOfunSTUDIO 5.0 HD Edition" bundled software on the CD-ROM (supplied).
- The number of days that have passed since the departure date is displayed for about 5 seconds if this unit is turned on etc. after setting the travel date or when the travel date is set.
- When the travel date is set, [] appears on the lower right of the screen.
- The travel date is calculated using the date in the clock setting and the departure date you set. If you set [WORLD TIME] (P93) to the travel destination, the travel date is calculated using the date in the clock setting and the travel destination setting.
- The travel date setting is memorised even if the camera is turned off.
- If [TRAVEL DATE] is set to [OFF], the number of days that have passed since the departure date will not be recorded. Even if [TRAVEL DATE] is set to [SET] after taking the pictures, which day of the vacation you took them is not displayed.
- If you set a departure date and then take a picture on a date before this departure date, [-] (minus) is displayed in orange and the day of the vacation on which you took the picture is not recorded.
- If the travel date is displayed as [-] (minus) in white, there is a time difference that involves date change between the [HOME] and [DESTINATION]. (It will be recorded).
- [TRAVEL DATE] cannot be set for motion pictures recorded with [AVCHD Lite].

[LOCATION]

Set a travel destination. The destination is then recorded when you take pictures and can be displayed at playback. You can stamp your pictures with this information using [TEXT STAMP] (P131).

[OFF]/[SET]

■ Setting the travel destination

1 Press ▼ to select [SET] and then press [MENU/SET].

2 Enter the travel destination.

- For details on how to enter characters, refer to "Entering Text" section on P117.

3 Press [MENU/SET] to close the menu.

- The travel destination you have set is displayed in the [TRAVEL MODE] menu.

■ To cancel the display of the travel destination

Set [LOCATION] to [OFF] in Step **1** of "Setting the travel destination".

Note

- The travel destination can be printed out using the "PHOTOfunSTUDIO 5.0 HD Edition" bundled software on the CD-ROM (supplied).
- [LOCATION] cannot be recorded when taking motion pictures.
- You cannot set [LOCATION] when [TRAVEL DATE] has been set to [OFF].

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[WORLD TIME]

Set times in the region where you live and the region of your overseas destination. You can then display local time and record local time when taking pictures on your vacation.

[DESTINATION]/[HOME]

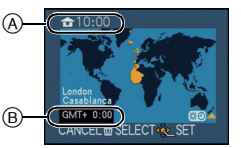
■ Setting areas for [DESTINATION]/[HOME]

When first using the camera after purchasing it, the [PLEASE SET THE HOME AREA] message appears. Press [MENU/SET], and set the home area on the screen in step **2**.

1 Press ▼ to select [HOME] and then press [MENU/SET].

2 Press ◄/► to select the home area, and then press [MENU/SET].

Ⓐ Current time
Ⓑ Time difference from GMT (Greenwich Mean Time)

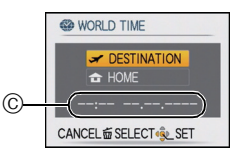


- If daylight saving time [ ] is used at the home area, press ▲. Press ▲ again to return to the original time.
- The daylight saving time setting for the home area does not advance the current time. Advance the clock setting by one hour.

3 Press ►.

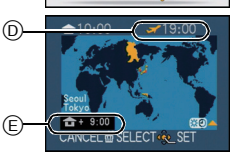
4 Press ▲ to select [DESTINATION] and then press [MENU/SET] to set.

Ⓒ The time in the selected location is displayed



5 Press ◄/► to select the area the travel destination is in and then press [MENU/SET] to set.

Ⓓ Current time of the destination area
Ⓔ Time difference
- If daylight saving time [ ] is used at the travel destination, press ▲. (The time advances by one hour.) Press ▲ again to return to the original time.



6 Press [MENU/SET] to close the menu.

- The date and time in the set [DESTINATION] or [HOME] appears in the [TRAVEL MODE] menu.

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Note

- To reset the time to [HOME] time when you get back from your vacation etc., follow the instructions of Step **1** and **2**.
- If [HOME] is already set, change only the travel destination, and use.
- If you cannot find the travel destination in the areas displayed on the screen, set by the time difference from the home area.
- The travel destination icon [✈] appears when playing back pictures taken at the travel destination.

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Using the [REC] Mode Menu

[PICTURE SIZE]

For details on [REC] Mode menu settings, refer to **P22**.

Set the number of pixels. The higher the numbers of pixels, the finer the detail of the pictures will appear even when they are printed onto large sheets.

Applicable modes: iA, MS1, MS2, SCN

■ **When the aspect ratio is [4:3].**

∗ This item cannot be set in the Intelligent Auto Mode.

14M **(14M)**	4320×3240 pixels
10M **(10M EZ)**∗	3648×2736 pixels
7M **(7M EZ)**∗	3072×2304 pixels
5M **(5M EZ)**	2560×1920 pixels
3M **(3M EZ)**∗	2048×1536 pixels
0.3M **(0.3M EZ)**	640×480 pixels

■ **When the aspect ratio is [3:2].**

12.5M **(12.5M)**	4320×2880 pixels
9M **(9M EZ)**∗	3648×2432 pixels
6M **(6M EZ)**∗	3072×2048 pixels
4.5M **(4.5M EZ)**∗	2560×1712 pixels
2.5M **(2.5M EZ)**∗	2048×1360 pixels
0.3M **(0.3M EZ)**∗	640×424 pixels

■ **When the aspect ratio is [16:9].**

10.5M **(10.5M)**	4320×2432 pixels
7.5M **(7.5M EZ)**∗	3648×2056 pixels
5.5M **(5.5M EZ)**∗	3072×1728 pixels
3.5M **(3.5M EZ)**∗	2560×1440 pixels
2M **(2M EZ)**∗	1920×1080 pixels
0.2M **(0.2M EZ)**∗	640×360 pixels

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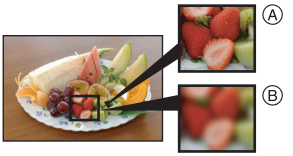
Note



- "EZ" is an abbreviation of "Extra Optical Zoom".
- A digital picture is made of numerous dots called pixels. The higher the numbers of pixels, the finer the picture will be when it is printed on a large piece of paper or displayed on a PC monitor.
  Ⓐ Many pixels (Fine)
  Ⓑ Few pixels (Rough)
  ✳ These pictures are examples to show the effect.
- If you change the aspect ratio, set the picture size again.
- The Extra Optical Zoom does not work when Macro Zoom is set or in [TRANSFORM], [HIGH SENS.], [HI-SPEED BURST], [FLASH BURST], [PIN HOLE] and [PHOTO FRAME] in Scene Mode so the picture size for [EZ] is not displayed.
- Pictures may appear in mosaic depending on the subject and the recording conditions.
- Refer to P184 for information about the number of recordable pictures.

[QUALITY]

For details on [REC] Mode menu settings, refer to P22.
Set the compression rate at which the pictures are to be stored.

Applicable modes:

[▪▪▪]: Fine (when giving priority to the picture quality)

[▪▪▪]: Standard (when using the standard picture quality and increasing the number of pictures to be recorded without changing the number of pixels)

Note

- Refer to P184 for information about the number of recordable pictures.

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[ASPECT RATIO]

For details on [REC] Mode menu settings, refer to P22.
This allows you to select the aspect ratio of the pictures to suit printing or the playback method.

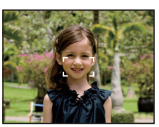
Applicable modes: 📷 MS1 MS2 SCN

[4:3]: [ASPECT RATIO] of a 4:3 TV

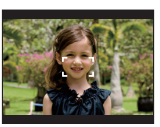
[3:2]: [ASPECT RATIO] of a 35 mm film camera

[16:9]: [ASPECT RATIO] of a high-definition TV, etc.

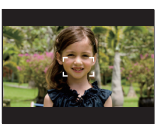
[4:3]



[3:2]



[16:9]



Note
- The ends of the recorded pictures may be cut at printing so check before printing. (P182)

[INTELLIGENT ISO]

For details on [REC] Mode menu settings, refer to P22.
The camera automatically sets the optimum ISO sensitivity and shutter speed to suit the movement of the subject and brightness of the scene to minimise the jitter of the subject.

Applicable modes: 📷

[OFF]/[ISOMAX 400]/[ISOMAX 800]/[ISOMAX 1600]
- The upper limit of the ISO sensitivity can be set.
- The higher the value set for the ISO sensitivity, the more the jitter is reduced but the greater the amount of picture noise.

Note
- Depending on the brightness and how fast the subject is moving, jitter may not be avoided.
- Movements may not be detected when a moving subject is small, when a moving subject is at the edge of the screen or when a subject has moved at the very moment when the shutter button was pressed fully.
- To avoid picture noise, we recommend decreasing maximum ISO sensitivity level or setting [COLOR MODE] to [NATURAL]. (P108)

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[SENSITIVITY]

For details on [REC] Mode menu settings, refer to P22.
This allows the sensitivity to light (ISO sensitivity) to be set. Setting to a higher number enables pictures to be taken even in dark places without the resulting pictures coming out dark.

Applicable modes:

[AUTO]/[80]/[100]/[200]/[400]/[800]/[1600]

ISO sensitivity	80 ⟷ 1600	
Recording location (recommended)	When it is light (outdoors)	When it is dark
Shutter speed	Slow	Fast
Noise	Less	Increased

Note
- When setting to [AUTO], the ISO sensitivity is automatically adjusted to a maximum of [ISO400] according to the brightness. (It can be adjusted to a maximum of [ISO1600] when using the flash.)
- The setting is not available when [INTELLIGENT ISO] is being used. ([iISO] is displayed.)
- To avoid picture noise, we recommend that you either reduce the ISO sensitivity level or set [COLOR MODE] to [NATURAL], and then take pictures. (P108)

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[WHITE BALANCE]

For details on [REC] Mode menu settings, refer to P22.
In sunlight, under incandescent lights or in other such conditions where the colour of white takes on a reddish or bluish tinge, this item adjusts to the colour of white which is closest to what is seen by the eye in accordance with the light source.

Applicable modes:

[AWB]: Automatic adjustment

[☼]: When taking pictures outdoors under a clear sky

[☁]: When taking pictures outdoors under a cloudy sky

[⌂]: When taking pictures outdoors in the shade

[☼]: When taking pictures under incandescent lights

[SET]: Value set by using [SET]

[SET]: Set manually

Note
- The optimal White Balance will differ depending on the type of halogen lighting being recorded under so use [AWB] or [SET].
- The White Balance setting is memorised even if the camera is turned off. (However, the White Balance setting for a Scene Mode returns to [AWB] when the Scene Mode is changed.)
- In the Scene Modes listed below, White Balance is fixed to [AWB].
  – [SCENERY]/[NIGHT PORTRAIT]/[NIGHT SCENERY]/[FOOD]/[PARTY]/[CANDLE LIGHT]/[SUNSET]/[FLASH BURST]/[STARRY SKY]/[FIREWORKS]/[BEACH]/[SNOW]/[AERIAL PHOTO]/[FILM GRAIN]/[UNDERWATER]

■ Setting the White Balance manually

Set the White Balance value. Use to match the condition when taking photographs.

1 **Select [SET] and then press [MENU/SET].**

2 **Aim the camera at a sheet of white paper etc., so that the frame in the centre is filled by the white object only and then press [MENU/SET].**
- White Balance may not be set correctly when the subject is too bright or too dark. Set the White Balance again after adjusting to appropriate brightness.

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■ Finely adjusting the White Balance [WB±]

You can finely adjust the White Balance when you cannot acquire the desired hue by setting the White Balance.

• Set the White Balance to [☼]/[☁]/[⌂]/[☼:]/[▀].

1 Press ▲ [▀] several times until [WB ADJUST.] appears and then press ◄/► to adjust the White Balance.

◄ **[RED]:** Press when the hue is bluish.

► **[BLUE]:** Press when the hue is reddish.

• Select [0] to return to the original White Balance.

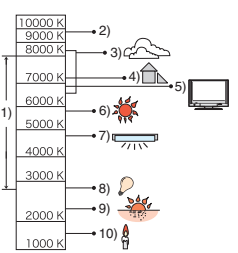
2 Press [MENU/SET] to finish.

• You can also press the shutter button halfway to finish.
• The White Balance icon on the screen turns red or blue.
• You can finely adjust the White Balance independently for each White Balance item.
• The White Balance fine adjustment setting is reflected in the picture when using the flash.
• The White Balance fine adjustment setting is memorised even if the camera is turned off.
• The White Balance fine adjustment level in [▀] returns to [0] when you reset the White Balance using [▀SET].
• In the [UNDERWATER] in Scene Mode, the White Balance is fixed at [AWB], but it can be finely adjusted.
• White Balance fine adjustment cannot be set for [B/W], [SEPIA], [COOL] and [WARM] in [COLOR MODE].

■ Auto White Balance

Depending on the conditions prevailing when pictures are taken, the pictures may take on a reddish or bluish tinge. Furthermore, when a multiple number of light sources are being used or there is nothing with a colour close to white, Auto White Balance may not function properly. In this case, set the White Balance to a mode other than [AWB].

1 Auto White Balance will work within this range
2 Blue sky
3 Cloudy sky (Rain)
4 Shade
5 TV screen
6 Sunlight
7 White fluorescent light
8 Incandescent light bulb
9 Sunrise and sunset
10 Candlelight
K=Kelvin Colour Temperature



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[FACE RECOG.]

For details on [REC] Mode menu settings, refer to P22.
Specify a person's face and use the Face Recognition functions.

Applicable modes: iA MS1 MS2 SCN
[OFF]/[ON]/[MEMORY]/[SET]

Note
• Refer to P84 for details.

[AF MODE]

For details on [REC] Mode menu settings, refer to P22.
This allows the focusing method that suits the positions and number of the subjects to be selected.

Applicable modes: MS1 MS2 SCN

[ ]: Face Detection	The camera automatically detects the person's face. The focus and exposure can then be adjusted to fit the face no matter what portion of the picture it is in. (max. 15 areas)
[ ]: AF Tracking*	Focus can be adjusted to a specified subject. Focus will keep on following the subject even if it moves. (Dynamic tracking)
[ ]: 11-area-focusing*	The camera focuses on any of 11 focus areas. This is effective when the subject is not in the centre of the screen.
[ ]: 1-area-focusing (High speed)*	The camera quickly focuses on the subject in the AF area on the centre of the screen.
[ ]: 1-area-focusing	The camera focuses on the subject in the AF area on the centre of the screen.
[ ]: Spot-focusing*	The camera focuses on a limited narrow area in the screen.

* [ ] will be used during motion picture recording.

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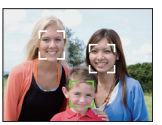
Note

- The camera is focusing on all the AF areas when multiple AF areas (max. 11 areas) light at the same time in [▣]. If you want to determine the focus position to take pictures, switch the AF Mode to [▣], [■] or [•].
- If the AF Mode is set to [▣], the AF area is not displayed until the picture is brought into focus.
- Switch the AF Mode to [▣] or [■] if it is difficult to focus using [•].
- The camera may detect the subjects other than a person as the face. In this case, switch the AF Mode to any modes other than [👤] and then take a picture.
- It will be fixed to [👤] when the [FACE RECOG.] is set to [ON].
- It is not possible to set [👤] in the following cases.
  – In [PANORAMA ASSIST], [NIGHT SCENERY], [FOOD], [STARRY SKY], [FIREWORKS], [AERIAL PHOTO] and [UNDERWATER] in Scene Mode.

■ About [👤] (Face Detection)



The following AF area frames are displayed when the camera detects the faces.
Yellow:
When the shutter button is pressed halfway, the frame turns green when the camera is focused.
White:
Displayed when more than one face is detected. Other faces that are the same distance away as faces within the yellow AF areas are also focused.

- Under certain picture-taking conditions including the following cases, the facial recognition function may fail to work, making it impossible to detect faces. [AF MODE] is switched to [▣].
  – When the face is not facing the camera
  – When the face is at an angle
  – When the face is extremely bright or dark
  – When there is little contrast on the faces
  – When the facial features are hidden behind sunglasses, etc.
  – When the face appears small on the screen
  – When there is rapid movement
  – When the subject is other than a human being
  – When the camera is shaking
  – When Digital Zoom is used

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■ About [▣] [1-area-focusing (High speed)]

- You can focus on the subject more quickly than in other AF Modes.
- The picture may stop moving for a moment before being brought into focus when you press the shutter button halfway. This is not a malfunction.

■ Setting up [] (AF Tracking)

1 Bring the subject to the AF tracking frame, and press ▼ to lock the subject.

Ⓐ AF tracking frame (White)
Ⓑ AF tracking frame (Yellow)

- AF tracking frame will continuously focus on the subject's movement once the subject is recognised.
- AF tracking is turned off when ▼ is pressed again.

Before locking

Ⓐ

Locked

Ⓑ

2 Take the picture.

Note

- Dynamic tracking function may fail to lock, lose the subject in AF tracking, or track different subject depending on the recording conditions such as the ones below.
  - When the subject is too small
  - When the recording location is too dark or bright
  - When the subject is moving too fast
  - When the background has the same or similar colour to the subject
  - When jitter is occurring
  - When using the zoom
- If it fails to lock, AF area will flash in red, and disappear. Press ▼ again.
- AF Tracking will not operate when the subject is not specified, the subject is lost, or has failed to be tracked. The picture will be taken with [▣] in [AF MODE] in that case.
- [FACE RECOG.] does not work when AF tracking is active.
- [] will not operate during AF tracking.
- It is not possible to set [] in [PANORAMA ASSIST], [STARRY SKY], [FIREWORKS], [PIN HOLE], [FILM GRAIN] and [HIGH DYNAMIC] in Scene Mode.
- It is not possible to set [] in [B/W], [SEPIA], [COOL], or [WARM] in [COLOR MODE].
- The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

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[PRE AF]

For details on [REC] Mode menu settings, refer to P22.
The camera will adjust focus automatically depending on the settings.

Applicable modes: [icons]

[OFF]	
[Q.AF]: Quick AF	[Q.AF] is displayed on the screen.
[C.AF]: Continuous AF*	[C.AF] is displayed on the screen.

* In recording motion pictures, only [C.AF] (Continuous AF) can be selected.

About [Q.AF] and [C.AF]
[Q.AF] will adjust the focus automatically when the jitter of the camera is reduced. [C.AF] will adjust the focus at all times (continuous AF operation).
The camera will adjust the focus automatically, and the focus adjustment when the shutter button is pressed becomes faster. It is effective when you do not want to miss the photo opportunity.

Note
- The battery will be consumed faster than usual.
- Press the shutter button halfway again when it is difficult to focus on the subject.
- [Q.AF] will not operate during the AF tracking.
- In [NIGHT PORTRAIT], [NIGHT SCENERY], [STARRY SKY] and [FIREWORKS] in Scene Mode, this setting is fixed to [OFF].
- When [PRE AF] is set to [C.AF], it may take time to focus on the subject if you rotate the zoom lever from Wide to Tele or suddenly change the subject from a distant one to a nearby one.

[I.EXPOSURE]

For details on [REC] Mode menu settings, refer to P22.
Contrast and exposure will be adjusted automatically when there is a big difference in brightness between the background and subject, to bring the image close to real life.

Applicable modes: [icon]
[OFF]/[ON]

Note
- When [ON] is set, [i◑] is displayed on the screen.
- Even when the [SENSITIVITY] is set to [ISO80]/[ISO100], [SENSITIVITY] may be set higher than [ISO80]/[ISO100] if the picture is taken with [I.EXPOSURE] set to valid.
- Compensation effect may not be achieved depending on the conditions.
- [i◑] in the screen turns to yellow when [I.EXPOSURE] is in effect.

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[MIN. SHTR SPEED]

For details on [REC] Mode menu settings, refer to P22.
You can take bright pictures in dark places by setting [MIN. SHTR SPEED] slower. Also, you can set it faster to reduce the blur of the subject.

Applicable modes:
[AUTO], [1/125], [1/60], [1/30], [1/15], [1/8], [1/4], [1/2], [1]

Minimum shutter speed setting	1/125 ⟷ 1	
Brightness	Darker	Brighter
Jitter	Less	More

Note
- This should usually be set to [AUTO] to take pictures. (When you select a minimum shutter speed other than [AUTO], [MIN] appears on the screen.)
- Setting [MIN. SHTR SPEED] to slower speed might increase the chance of jitter, so we recommend using a tripod and the self-timer for taking pictures.
- Setting [MIN. SHTR SPEED] to faster speed might make the picture darker, so we recommend recording the picture in a well-lit area. If correct exposure cannot be achieved, [MIN] will flash in red when the shutter button is pressed halfway.

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[BURST]

For details on [REC] Mode menu settings, refer to P22.
Pictures are taken continuously while the shutter button is pressed.
Select the ones you really like from the pictures you have taken.

Applicable modes: iA P MS1 MS2 SCN
[OFF]/[□]

Burst speed (pictures/second)		approx. 1.8*
Number of recordable pictures		max. 3
		max. 5

* The Burst speed is constant regardless of the transfer speed of the card.
• The Burst speed values given above apply when the shutter speed is 1/60 or faster.

Note
• The focus, exposure and White Balance are fixed when the first picture is taken.
• When the self-timer is used, the number of recordable pictures in Burst Mode is fixed to 3.
• If you are following a moving subject while taking pictures in a place (landscape) indoors, outdoors etc. where there is a large difference between the light and shade, the exposure may not become optimal.
• The Burst speed (pictures/second) may become slower depending on the recording environment such as in dark places, if the ISO sensitivity is high etc.
• Burst Mode is not cancelled when the camera is switched off.
• If you take pictures in Burst Mode with the built-in memory, it will take time to write the picture data.
• **[⊘] is set for the flash when Burst is set.**
• **Auto Bracket is cancelled when Burst is set.**
• Burst cannot be used in [TRANSFORM], [PANORAMA ASSIST], [HI-SPEED BURST], [FLASH BURST], [STARRY SKY], [PIN HOLE], [FILM GRAIN], [HIGH DYNAMIC] or [PHOTO FRAME] in Scene Mode.

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[I.RESOLUTION]

For details on [REC] Mode menu settings, refer to P22.
Pictures with sharp profile and resolution can be taken by utilising the Intelligent Resolution Technology.

Applicable modes:

[OFF]/[ON]

[i.ZOOM]: [I.RESOLUTION] is activated, and the zoom magnification is increased by approximately 1.3× without noticeable deterioration in the picture.

Note
- Refer to P41 for information about the Intelligent Zoom.
- [I.RESOLUTION] is fixed to [i.ZOOM] in Intelligent Auto Mode or Clipboard Mode.
- This will be fixed to [ON] for [HIGH SENS.] and [HI-SPEED BURST] in Scene Mode, to [OFF] for the [FLASH BURST] and [PIN HOLE] in Scene Mode, and to [i.ZOOM] in all other Scene Modes.

[DIGITAL ZOOM]

For details on [REC] Mode menu settings, refer to P22.
This can enlarge subjects even more than the Optical Zoom or Extra Optical Zoom.

Applicable modes: MS1 MS2 SCN

[OFF]/[ON]

Note
- Refer to P41 for details.
- If camera shake (jitter) is a problem during zooming, it is recommended that [STABILIZER] be set to [AUTO] or [MODE1].
- The setting is fixed to [ON] in Macro Zoom Mode.

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[COLOR MODE]

For details on [REC] Mode menu settings, refer to P22.
Using these modes, the pictures can be made sharper or softer, the colours of the pictures can be turned into sepia colours or other colour effects can be achieved.

Applicable modes: iA

[STANDARD]: This is the standard setting.
[Happy]∗1: Image with enhanced brightness and vividness.
[NATURAL]∗2: The picture becomes softer.
[VIVID]∗2: The picture becomes sharper.
[B/W]: The picture becomes black and white.
[SEPIA]: The picture becomes sepia.
[COOL]∗2: The picture becomes bluish.
[WARM]∗2: The picture becomes reddish.

∗1 This can be set only when Intelligent Auto Mode is set.
∗2 This can be set only during Normal Picture Mode.

Note
- When you take pictures in dark places, noise may become visible. To avoid noise, we recommend setting to [NATURAL].
- In Intelligent Auto Mode, you can set this mode separately.

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[STABILIZER]

For details on [REC] Mode menu settings, refer to P22.
Using one of these modes, jitter during picture taking is detected, and the camera automatically compensates for the jitter, enabling jitter-free images to be taken.

Applicable modes:

[OFF]

[AUTO]: The optimum jitter compensation is selected depending on the condition.

[MODE1]: Jitter is always compensated during [REC] Mode.

[MODE2]: Jitter is compensated for when the shutter button is pressed.

Note

- The stabilizer function may not be effective in the following cases.
  – When there is a lot of jitter.
  – When the zoom magnification is high.
  – In Digital Zoom range.
  – When taking pictures while following a moving subject.
  – When the shutter speed becomes slower to take pictures indoors or in dark places.
  Be careful of camera jitter when you press the shutter button.
- The setting is fixed to [MODE2] with [SELF PORTRAIT] in Scene Mode and to [OFF] in [STARRY SKY] in Scene Mode.
- The setting is fixed to [MODE1] in recording motion pictures.

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[AUDIO REC.]

For details on [REC] Mode menu settings, refer to P22.
Audio can be recorded simultaneously with the image. You can record the conversation during the shooting or the situation as a memo.

Applicable modes:

[OFF]: Audio will not be recorded.

[ON]: [🎙] is displayed on the screen.
Audio will be recorded as soon as the image is recorded.
(It will stop in 5 seconds)

- If you press [MENU/SET] during audio recording, the audio recording is cancelled.

Note

- The sound is set separately from [AUDIO REC.] (P114) in the Clipboard Mode.
- Audio is recorded from the built-in microphone on the camera.
- Audio recorded with this unit may not play back on other equipment.
- Sound from motion pictures or pictures with audio recorded by this camera cannot be played back by older models of Panasonic digital camera (LUMIX) launched before July 2008.
- [AUDIO REC.] cannot be set in the following cases.
  – When recording with Auto Bracket
  – During Burst shooting
  – [PANORAMA ASSIST], [HI-SPEED BURST], [FLASH BURST] and [STARRY SKY] in Scene Mode

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[AF ASSIST LAMP]

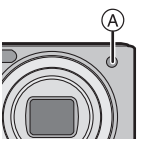
For details on [REC] Mode menu settings, refer to P22.
Illuminating the subject makes it easier for the camera to focus when recording in low light conditions that make focusing difficult.

Applicable modes: iA M1 M2 SCN

[OFF]: The AF Assist Lamp does not turn on.

[ON]: When taking pictures in dark places, the AF Assist Lamp lights while the shutter button is pressed halfway. (Larger AF areas are now displayed.)

Note
- The effective range of the AF Assist Lamp is 1.5 m (4.92 feet).
- When you do not want to use the AF Assist Lamp Ⓐ (e.g. when taking pictures of animals in dark places), set the [AF ASSIST LAMP] to [OFF]. In this case, it will become more difficult to focus on the subject.
- [AF ASSIST LAMP] is fixed to [OFF] in [SELF PORTRAIT], [SCENERY], [NIGHT SCENERY], [SUNSET], [FIREWORKS] [AERIAL PHOTO], and [UNDERWATER] in Scene Mode.



[RED-EYE REMOVAL]

For details on [REC] Mode menu settings, refer to P22.
When the flash is used with the Red-Eye Reduction ([ ], [ ], [ ]) selected, it will automatically detect and correct the red-eye in the image data.

Applicable modes: iA M1 M2 SCN

[OFF]/[ON]

Note
- It may not be able to correct the red-eye depending on the recording conditions.
- When the Digital Red-Eye Correction is set to [ON], [ ] appears on the flash icon.
- Refer to P52 for details.

[CLOCK SET]

For details on [REC] Mode menu settings, refer to P22.
To set the year, month, day and time.
It functions in exactly the same way as [CLOCK SET] (P25) in the [SETUP] menu.

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Using the [MOTION PICTURE] Mode Menu

[REC MODE]

For details on [MOTION PICTURE] Mode menu settings, refer to P22.
This sets up the data format of motion pictures.

Applicable modes: iA MS1 MS2 SCN

[[AVCHD Lite]]/[[MOTION JPEG]]

Note
• Refer to P81 for details.

[REC QUALITY]

For details on [MOTION PICTURE] Mode menu settings, refer to P22.
This sets up the picture quality of motion pictures.

Applicable modes: iA MS1 MS2 SCN

■ When [REC MODE] is [[AVCHD Lite]].
[SH]/[H]/[L]

■ When [REC MODE] is [[MOTION JPEG]].
[HD]/[WVGA]/[VGA]/[QVGA]

Note
• Refer to P81 for details.

[CONTINUOUS AF]

For details on [MOTION PICTURE] Mode menu settings, refer to P22.
It will continually keep on focusing to the subject that the focus was once set.

Applicable modes: MS1 MS2 SCN

[OFF]/[ON]

Note
• When set to [OFF], it may take time for motion picture recording to start.
• Set this function to [OFF] if you wish to fix the focus on the position where you started the motion picture recording.
• In [STARRY SKY] and [FIREWORKS] in Scene Mode, this setting is fixed to [OFF].

[WIND CUT]

For details on [MOTION PICTURE] Mode menu settings, refer to P22.
This reduces the wind noise in the audio recording.

Applicable modes: MS1 MS2 SCN

[OFF]/[ON]

Note
• Sound quality will be different than usual when [WIND CUT] is set.

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Mode dial:

Taking and Viewing Clipboard Pictures (Clipboard Mode)

This setting is useful when taking pictures of timetables, route maps or other information instead of taking notes. **Regardless of whether a card is present or not, the data is stored in the dedicated clipboard folder of the built-in memory** so it can be differentiated from the regular taken pictures and made available for immediate viewing. Clipboard pictures can be recorded, played back and deleted only when the Mode dial is set to [].

• Motion picture cannot be taken in Clipboard Mode.

Taking Clipboard Pictures

1 Slide the [REC]/[PLAYBACK] selector switch to [].

2 Set the Mode dial to [].

3 Take the pictures.

• Number of recordable pictures when using the built-in memory solely for clipboard pictures

Picture size	2M	1M
Number of recordable pictures	81	120

– If the built-in memory contains pictures recorded in another Recording Mode, fewer pictures can be recorded than the figures given above.
– The focus range is 3 cm (0.10 feet) (Wide)/1 m (3.28 feet) (Tele) to ∞.

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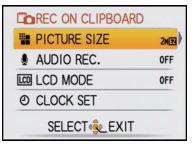
Clipboard Recording Menu

The menu screen appears when [MENU/SET] is pressed during clipboard picture recording.

1 Press ▲/▼ to select the menu item and then press ►.



Item	Description of setting
[PICTURE SIZE]	Used to change the picture size. 2M EZ: initial setting (Prefer quality) 1M EZ: prefer quantity
[AUDIO REC.]	Used to record sound (5 seconds) together with the pictures. ✳ This setting is not reflected in [AUDIO REC.] (P110) in the [REC] Mode menu.
[LCD MODE]	This has same function as the [LCD MODE] in the [SETUP] menu. (P25)
[CLOCK SET]	Used to set the clock.

2 Press ▲/▼ to select the setting and then press [MENU/SET].

3 Press [MENU/SET] to close the menu.

- You can also press the shutter button halfway to close the menu.

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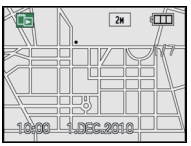
Viewing Clipboard Pictures

1 Slide the [REC]/[PLAYBACK] selector switch to [▶].

2 Set the mode dial to [🖹].



3 Press ◄/► to select the picture.

◄: Play back the previous picture.

►: Play back the next picture.

- When the zoom lever is turned to [▪] (W), a screen showing 12 pictures appears. To return to the full-screen display, turn the zoom lever to [🔍] (T).

■ Deleting clipboard pictures

The steps taken are the same as for normal deletion. Refer to P47.

- When a picture with a zoom mark is deleted, it will no longer be possible to view the picture prior to zooming either.
- Zoomed pictures can also be deleted.

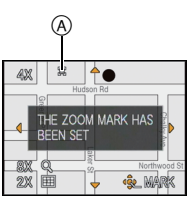
Enlarging clipboard pictures and storing them in the memory (zoom marks)

This function is useful for enlarging parts of maps, for instance, and storing them in the memory. For details on how to enlarge pictures, refer to “Using the Playback Zoom” on P46.

1 Select the position to record by zoom lever and ▲/▼/◄/►.

2 Press [MENU/SET].

- The zoom mark [⊹] Ⓐ now appears on the picture stored in the memory.
- To change the zoom magnification or position, repeat the steps above.
- To exit the zoom mark setting, return the zoom magnification to [▪] (W) (1×).



■ Viewing pictures stored in the memory

1 Press ◄/► to display the picture with the zoom mark [⊹].

2 Rotate the zoom lever to [🔍] (T).

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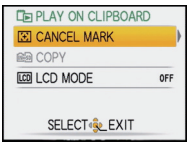
Clipboard Playback Menu

When [MENU/SET] is pressed during Clipboard Playback, the menu screen appears. (The steps taken are the same as for the “Clipboard Recording Menu” (P114).)



Item	Description of setting
[CANCEL MARK]	Used to release the zoom position. **1 Press ◄/► to select clipboard pictures with Zoom Mark [⊹].** **2 Press [MENU/SET] to cancel.**
[COPY]	Used to copy clipboard pictures onto a card one at a time. ∗Zoom Marks are not copied. **1 Press ◄/► to select the picture and then press [MENU/SET].** **2 Press ▲ to select [YES] and then press [MENU/SET].**
[LCD MODE]	This has same function as the [LCD MODE] in the [SETUP] menu. (P25)

Settings During Clipboard

• Following functions are fixed.

Item	Description of settings
[GUIDE LINE] ([REC. INFO.])	[OFF]
[GUIDE LINE] ([PATTERN])	▦
[ECONOMY] ([SLEEP MODE])	5 minutes
[SELFTIMER]	2 seconds/off
[QUALITY]	▃▅▇
[ASPECT RATIO]	4:3

Item	Description of settings
[SENSITIVITY]	[AUTO]
[WHITE BALANCE]	[AWB]
[AF MODE]	▣
[i.RESOLUTION]	[i.ZOOM]
[AF ASSIST LAMP]	[ON]

• In the Clipboard Mode, the following functions cannot be used.
– [AUTO BRACKET]/White Balance fine adjustment/[INTELLIGENT ISO]/[PRE AF]/[I.EXPOSURE]/[MIN. SHTR SPEED]/[BURST]/[DIGITAL ZOOM]/[COLOR MODE]/[HISTOGRAM]/[SLIDE SHOW]/[MODE PLAY]/[TRAVEL PLAY]/[CATEGORY PLAY]/[FAVORITE PLAY]
• The [STABILIZER] (P109) setting in [REC] Mode is also reflected in Clipboard Mode.
• Other items in the [SETUP] menu and the items on the [TRAVEL MODE] menu can be set in the Normal Picture Mode, etc. Setting will be reflected to the Clipboard Mode.

Note

• Please bear copyrights and other such matters in mind.
• The [PLAYBACK] Mode menu (P128) function cannot be used.
• You cannot print while using the Clipboard Mode. (Clipboard images copied to a card can be printed.)

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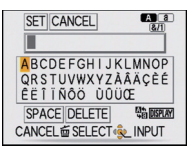
Entering Text

It is possible to enter babies' and pets' names and the names of travel destinations when recording. (Only alphabetical characters and symbols can be entered.)

1 Display the entry screen and press ▼ to move to the character selection section.

- You can display the entry screen via the following operations.
  – [NAME] of [BABY1]/[BABY2] or [PET] (P68) in Scene Mode.
  – [NAME] in [FACE RECOG.] (P87)
  – [LOCATION] in [TRAVEL MODE] (P92)
  – [TITLE EDIT] (P129)

2 Press ▲/▼/◄/► to select text and then press [MENU/SET] to register.



- Press [DISPLAY] to switch text between [A] (capitals), [a] (lower case) and [&/1] (special characters and numbers).
- The entry cursor position can be moved left and right with the zoom lever.
- To enter a blank, move the cursor to [SPACE], to delete an entered character, move the cursor to [DELETE], or to stop editing during text entry, move the cursor to [CANCEL], and press [MENU/SET].
- A maximum of 30 characters can be entered. (Maximum of 9 characters when setting names in [FACE RECOG.])

3 Press ▲/▼/◄/► to move the cursor to [SET] and then press [MENU/SET] to end text input.

- Display will return to the appropriate setting screen.

Note

- Text can be scrolled if all of the entered text does not fit on the screen.

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[PLAYBACK] Mode:

Playing Back Pictures in Sequence (Slide Show)

You can play back the pictures you have taken in synchronisation with music, and you can do this in sequence while leaving a fixed interval between each of the pictures.
You can also put together a Slide Show composed of only still pictures, only motion pictures, only pictures of a particular category, only pictures taken in Travel Mode, or only favourites.
We recommend this feature when you view your pictures by connecting the camera to a TV.

1 **Slide the [REC]/[PLAYBACK] selector switch to [▶], and then press [MENU/SET].**

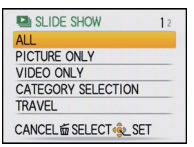
- Set the Mode dial to anything except [].

2 **Press ►.**

3 **Press ▲/▼ to select [SLIDE SHOW], and then press [MENU/SET].**

4 **Press ▲/▼ to select the item and then press [MENU/SET].**

- [FAVORITE] can be selected only when [FAVORITE] on the [PLAYBACK] menu (P138) is at [ON] and there are pictures already set as favourites.
- During [CATEGORY SELECTION], press ▲/▼/◀/► to select a category, and then press [MENU/SET] to proceed to step **5**. For details on categories, refer to P123.
- For selections other than [TRAVEL], proceed to Step **6**.



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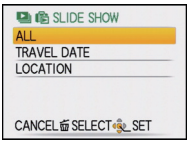
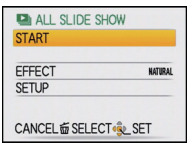
5 Press ▲/▼ to select the item and then press [MENU/SET].



Item	Description of settings
[ALL]	All the images with travel date set are played back in order.
[TRAVEL DATE]	All the images will be played back in order from the selected date. **Press ▲/▼/◄/► to select the date to be played back, and then press [MENU/SET].** • If there were no pictures recorded during a month, that month is not displayed.
[LOCATION]	Images from selected travel location are played back in order. **Press ▲/▼/◄/► to select the travel destination to be played back, and then press [MENU/SET].**

6 Press ▲ to select [START] and then press [MENU/SET].



7 Press ▼ to finish the slide show.

• Normal playback resumes after the slide show finishes.

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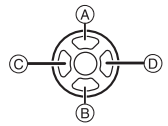
■ Operations performed during slide show

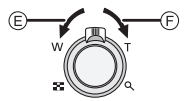
The cursor displayed during playback is the same as ▲/▼/◀/▶.

• The menu screen is restored when [🗑] is pressed.

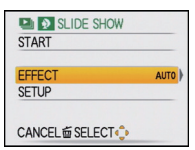
Ⓐ Play/Pause
Ⓑ Stop
Ⓒ Back to previous picture*
Ⓓ Ahead to next picture*
* These operations can be performed only in the Pause Mode or during motion picture playback.



Ⓔ Reduce volume level
Ⓕ Increase volume level



■ Changing the slide show settings



You can change the settings for slide show playback by selecting [EFFECT] or [SETUP] on the slide show menu screen.

[EFFECT]

This allows you to select the screen effects or music effects when switching from one picture to the next.

[NATURAL], [SLOW], [SWING], [URBAN], [OFF], [AUTO]

• When [URBAN] has been selected, the picture may appear in black and white as a screen effect.
• [AUTO] can be used only when [CATEGORY SELECTION] has been selected. The pictures are played back with the recommended effects in each category.
• [EFFECT] is set to [OFF] when playing a slide show with motion pictures only.

[SETUP]

[DURATION] or [REPEAT] can be set.

Item	Settings	
[DURATION]	1SEC./2SEC./3SEC./5SEC.	
[REPEAT]	OFF/ON	
[SOUND]	[OFF]:	There will be no sound.
	[AUTO]:	Music is played when the still pictures are played back, and audio is played when the motion pictures or still pictures with audio are played back.
	[MUSIC]:	Music is played back.
	[AUDIO]:	Audio (only for motion pictures and still pictures with audio) is played back.

• [DURATION] can be set only when [OFF] has been selected as the [EFFECT] setting.

Note

• It is not possible to add new music.

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[PLAYBACK] Mode:

Selecting Pictures and Playing them Back

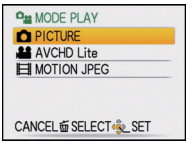
[MODE PLAY]

Playback in [PICTURE], [AVCHD Lite], or [MOTION JPEG] can be selected.

1 **Perform steps 1 and 2 on page 118.**

2 **Press ▲/▼ to select [MODE PLAY] and then press [MENU/SET].**

3 **Press ▲/▼ to select the item and then press [MENU/SET].**



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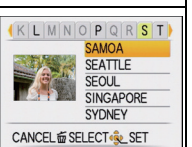
[TRAVEL PLAY]

You can play back the pictures taken in the Travel Mode (P91).

1 **Perform steps 1 and 2 on page 118.**

2 **Press ▲/▼ to select [TRAVEL PLAY], and then press [MENU/SET].**

3 **Press ▲/▼ to select the item and then press [MENU/SET].**

Item	Description of settings	
[ALL]	All the images taken with travel date set are played back. • Pictures without travel dates are not displayed.	
[TRAVEL DATE]	All the images will be played back starting from the date they were recorded. **Press ▲/▼/◄/► to select the date to be played back, and then press [MENU/SET].** • If there were no pictures recorded during a month, that month is not displayed. • Press [🗑] to return to the travel date selection screen.	
[LOCATION]	Images are played back by travel location. **Press ▲/▼/◄/► to select the travel destination, and then press [MENU/SET].** • [LOCATION] can be selected only when there are images with [LOCATION] set in Travel mode.	

Note

- Pictures taken in the Travel Mode and stored in the dedicated clipboard folder are not displayed.
- If there are multiple pictures with the same recording date, the first picture recorded on that day is displayed.
- From the travel date selection screen, you can display pictures with dates from January 2000 to December 2099.
- If you take pictures after setting the travel destination in [WORLD TIME], the pictures are displayed by the dates at the travel destination in calendar playback.
- You can use only [ROTATE DISP.], [PRINT SET] or [PROTECT] in the [PLAYBACK] menu.

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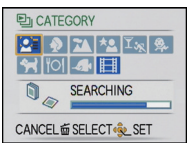
[CATEGORY PLAY]

This mode allows you to search images by Scene Mode or other categories (such as [PORTRAIT], [SCENERY] or [NIGHT SCENERY]) and sort the pictures into each of the categories. You can then play back the pictures in each category.

1 **Perform steps 1 and 2 on page 118.**

2 **Press ▲/▼ to select [CATEGORY PLAY], and then press [MENU/SET].**

3 **Press ▲/▼/◄/► to select the category and then press [MENU/SET] to set.**



- If a picture is found in a category, the category icon turns blue.
- It may take time to search the picture files if there are a lot on the card or the built-in memory.
- If you press [🗑] while searching, the searching will stop halfway.
- Pictures are sorted into the categories shown below.

[CATEGORY]	Recording information e.g. Scene Modes
	[FACE RECOG.]*
	[PORTRAIT], [i-PORTRAIT], [SOFT SKIN], [TRANSFORM], [SELF PORTRAIT], [NIGHT PORTRAIT], [i-NIGHT PORTRAIT], [BABY1]/[BABY2], [i-BABY]
	[SCENERY], [i-SCENERY], [SUNSET], [i-SUNSET], [AERIAL PHOTO]
	[NIGHT PORTRAIT], [i-NIGHT PORTRAIT], [NIGHT SCENERY], [i-NIGHT SCENERY], [STARRY SKY]

[CATEGORY]	Recording information e.g. Scene Modes
	[SPORTS], [PARTY], [CANDLE LIGHT], [FIREWORKS], [BEACH], [SNOW], [AERIAL PHOTO]
	[BABY1]/[BABY2], [i-BABY]
	[PET]
	[FOOD]
	[UNDERWATER]
	[AVCHD Lite], [MOTION JPEG]

*Press ▲/▼/◄/► to select the person to play back and then press [MENU/SET]. Face Recognition may not be possible or may not recognise faces correctly even for registered faces, depending on the facial expression and environment.

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[FAVORITE PLAY]

You can play back the pictures you have set as [FAVORITE] (P138) (Only when [FAVORITE] is set to [ON] and there are pictures which have been set to [FAVORITE]).

1 Perform steps 1 and 2 on page 118.

2 Press ▲/▼ to select [FAVORITE PLAY], and then press [MENU/SET].

Note

- You can use only [ROTATE DISP.], [PRINT SET] or [PROTECT] in the [PLAYBACK] menu.

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[PLAYBACK] Mode:

Playing Back Motion Pictures/Pictures with Audio

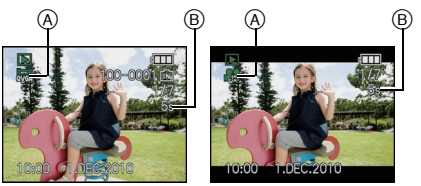
- This unit was designed to play motion pictures and still pictures with audio using the QuickTime Motion JPEG and AVCHD Lite formats that were taken with this model (only).
- Only [AVCHD Lite] motion pictures recorded with this unit and Panasonic digital cameras (LUMIX) can be played back with this unit as AVCHD Lite format.

Motion pictures

Press ◄/► to select a picture with a Motion Picture icon (such as [VGA]), and then press ▲ to play back.

Ⓐ Motion picture icon
Ⓑ The motion picture recording time
- After playback starts, the elapsed playback time is displayed on the upper right of the screen.
  For example, 8 minutes and 30 seconds is displayed as [8m30s].

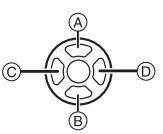
[MOTION JPEG] [AVCHD Lite]



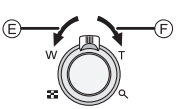
■ Operations performed during Motion Picture Playback

The cursor displayed during playback is the same as ▲/▼/◄/►.

Ⓐ Play/Pause
Ⓑ Stop
Ⓒ Fast rewind, Frame-by-frame rewind*
Ⓓ Fast forward, Frame-by-frame forward*
* These operations can be performed only in the Pause Mode.



Ⓔ Reduce volume level
Ⓕ Increase volume level



- **About fast forward/rewind playback**
  – Press ► during playback to fast forward (press ◄ to rewind). The fast forward/rewind speed increases if you press ◄/► again. (The display on the screen changes from ►► to ►►►.)
  – Press ▲ to resume normal playback speed.

Note

- Please note that the bundled software includes QuickTime or “PHOTOfunSTUDIO 5.0 HD Edition” to play back motion picture files created with the camera on the PC.
- QuickTime Motion JPEG motion pictures that were recorded with a PC or other equipment may have lower image quality or may not be able to playback with this unit.
- When using a high capacity card, it is possible that fast rewinding may be slower than usual.

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Pictures with audio

Press ◄/► to select a picture with the Audio icon [ ] and then press ▲ to play back.

Ⓐ Audio icon
• Refer to [AUDIO REC.] (P110) for information about how to create still pictures with audio.

Note
• Sound can be heard through the speaker. Refer to [VOLUME] (P25) for information about how to adjust the volume in the [SETUP] menu.
• Pictures with audio recorded with other equipment may not play back on this unit.

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[PLAYBACK] mode:

Creating Still Pictures From a Motion Picture

You can create a single still picture from a recorded motion picture.

1 **Press ▲ to pause Motion Picture playback.**

2 **Press [MENU/SET].**

3 **Press ▲ to select [YES] and then press [MENU/SET].**

Picture size

[MOTION JPEG]	Picture size
([HD])/ ([WVGA])	2 M
([VGA])/ ([QVGA])	0.3 M

[AVCHD Lite]	Picture size
([SH])/([H])/([L])	2 M

• [QUALITY] is fixed to [].

Note

• You may not be able to save still pictures from a motion picture taken on other equipment.

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[PLAYBACK] Mode:

Using the [PLAYBACK] Mode Menu

You can use various functions in Playback Mode to rotate pictures, set protection for them etc.

- With [TEXT STAMP], [RESIZE], [CROPPING] or [LEVELING], a new edited picture is created. A new picture cannot be created if there is no free space on the built-in memory or the card so we recommend checking that there is free space and then editing the picture.

[CALENDAR]

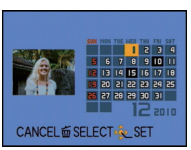
You can display pictures by recording date.

1 Select [CALENDAR] on the [PLAYBACK] Mode menu. (P22)

- You can also rotate the zoom lever several times towards [▪] (W) to display the calendar screen. (P45)

2 Press ▲/▼/◄/► to select the date to be played back.

- If there were no pictures recorded during a month, that month is not displayed.



3 Press [MENU/SET] to display the pictures that were recorded on the selected date.

- Press [🗑] to return to the calendar screen.

4 Press ▲/▼/◄/► to select a picture and then press [MENU/SET].

- The picture that was selected will appear.

Note

- The recording date of the picture selected in the playback screen becomes the date selected when the calendar screen is first displayed.
- If there are multiple pictures with the same recording date, the first picture recorded on that day is displayed.
- You can display the calendar between January 2000 and December 2099.
- If the date is not set in the camera, the recording date is set as the 1st January, 2010.
- If you take pictures after setting the travel destination in [WORLD TIME], the pictures are displayed by the dates at the travel destination in Calendar Playback.

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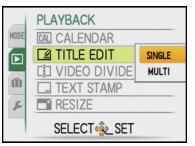
[TITLE EDIT]

You can add text (comments) to pictures. After text has been registered, it can be included in prints using [TEXT STAMP] (P131). (Only alphabetic characters and symbols can be entered.)

1 **Select [TITLE EDIT] on the [PLAYBACK] Mode menu. (P22)**

2 **Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].**



3 **Select the picture, and then press [MENU/SET] to set.**

- [✎] is displayed for pictures with titles already registered.

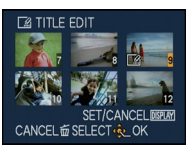
[MULTI] setting

Press [DISPLAY] to set (repeat), and then press [MENU/SET] to set.

[SINGLE]

Press ◄/► to select the picture.

[MULTI]



Press ▲/▼/◄/► to select the pictures.

- The setting is cancelled when [DISPLAY] is pressed again.

4 **Enter the text. (P117)**

5 **Press [🗑] to return to the menu screen.**✳

✳The menu screen is automatically restored when [MULTI] is selected.

- Press [MENU/SET] to close the menu.

Note

- To delete the title, erase all the text in the text input screen.
- Text can be scrolled if all of the registered text does not fit on the screen.
- You can print out texts (comments) using the “PHOTOfunSTUDIO 5.0 HD Edition” bundled software on the CD-ROM (supplied).
- You can set up to 50 pictures at one time with [MULTI].
- You cannot use [TITLE EDIT] for the following types of pictures:
  - Motion pictures
  - Protected pictures
  - Pictures recorded with other equipment

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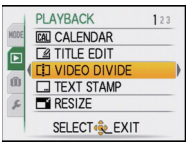
[VIDEO DIVIDE]

Recorded motion picture can be divided in two. It is recommended for when you want to divide a part you need with a part you do not need. **Motion picture before the dividing will be deleted.**

1 **Select [VIDEO DIVIDE] on the [PLAYBACK] Mode menu.** (P22)



2 **Press ◄/► to select the motion picture to divide, and then press [MENU/SET].**

- Motion picture is played back.

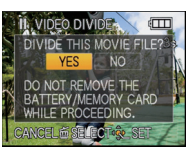
3 **Press ▲ at the location to divide.**

- Motion picture is paused.
  Motion picture is played back from the same location when ▲ is pressed again.

4 **Press ▼ to execute divide.**

5 **Press ◄ to select [YES] and then press [MENU/SET].**

- Motion picture may be lost if the card or battery is removed while processing the dividing.



6 **Press [🗑] to return to the menu screen.**

- Press [MENU/SET] to close the menu.

Note

- Motion pictures set as [FAVORITE] cannot be divided.
- The [PRINT SET] setting is cancelled when the motion picture set in [PRINT SET] is divided.
- [VIDEO DIVIDE] cannot be performed on motion pictures recorded with other equipment.
- Motion pictures with a short recording time cannot be divided.
- Motion pictures cannot be divided at a location close to the start or end of the motion picture.

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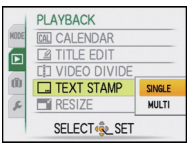
[TEXT STAMP]

You can stamp the recording date/time, name, location, travel date or title onto the recorded pictures.
It is suitable for regular size printing. (Pictures with a Picture Size larger than [3M] will be resized when stamping the date etc. on them.)

1 **Select [TEXT STAMP] on the [PLAYBACK] Mode menu.** (P22)

2 **Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].**



3 **Select the picture, and then press [MENU/SET] to set.**

- [☑] appears on screen if the picture is stamped with text.

[MULTI] setting

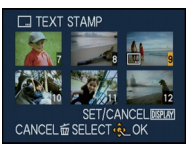
Press [DISPLAY] to set (repeat), and then press [MENU/SET] to set.

- The setting is cancelled when [DISPLAY] is pressed again.

[SINGLE]

Press ◄/► to select the picture.

[MULTI]



Press ▲/▼/◄/► to select the pictures.

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4 Press ▲/▼ to select text stamp items, and then press ►.

5 Press ▲/▼ to select the settings, and then press [MENU/SET].

Item	Setting item	
[SHOOTING DATE]	**[OFF]**	
	[W/OTIME]:	Stamp the year, month and date.
	[WITHTIME]:	Stamp the year, month, day, hour and minutes.
[NAME]	**[OFF]**	
	[]:	Stamps names registered in name settings for [FACE RECOG.].
	[/]:	Stamps names registered in name settings for [BABY1]/[BABY2] or [PET] in Scene Mode.
[LOCATION]	**[OFF]**	
	[ON]:	Travel location set in Travel mode will be stamped.
[TRAVEL DATE]	**[OFF]**	
	[ON]:	Travel date set in Travel mode will be stamped.
[TITLE]	**[OFF]**	
	[ON]:	Title input in the [TITLE EDIT] will be stamped.

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6 Press [MENU/SET].

- If you set [TEXT STAMP] for a picture with a picture size larger than [3M], the picture size will become smaller as shown below.

Aspect ratio setting	Picture size
4:3	14M/10M/7M/5M → 3M
3:2	12.5M/9M/6M/4.5M → 2.5M
16:9	10.5M/7.5M/5.5M/3.5M → 2M

- When selecting [👤] or [🐶/🐱], press ▲ to select [YES] for stamping [AGE], and then press [MENU/SET] and proceed to step **7**.

7 Press ▲ to select [YES] and then press [MENU/SET].

- The message [SAVE NEW PICTURES?] appears if the picture was recorded with a picture size [3M] or less.

8 Press [🗑] to return to the menu screen.*

*The menu screen is automatically restored when [MULTI] is selected.

- Press [MENU/SET] to close the menu.

Note

- When you print pictures stamped with text, the date will be printed over the stamped text if you specify printing of the date at the photo shop or on the printer.
- You can set up to 50 pictures at one time in [MULTI].
- The picture quality may deteriorate when text stamping is carried out.
- Depending on the printer being used, some characters may be cut at printing. Check before printing.
- When text is stamped onto the [0.2M]/[0.3M]/[0.3M] pictures, it is difficult to read it.
- Text and dates cannot be stamped on the pictures in the following cases.
  - Motion pictures
  - Pictures with audio
  - Pictures recorded without setting the clock and title
  - Pictures that were previously stamped with [TEXT STAMP]
  - Pictures recorded with other equipment

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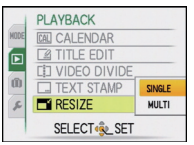
[RESIZE] Reducing the picture size (number of pixels)

To allow easy posting to web pages, attachment to e-mail etc., picture size (number of pixels) is reduced.

1 **Select [RESIZE] on the [PLAYBACK] Mode menu. (P22)**

2 **Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].**



3 **Select the picture and size.**

[SINGLE] setting

1 **Press ◄/► to select the picture, and then press [MENU/SET].**

2 **Press ◄/► to select the size*, and then press [MENU/SET].**

* Only the sizes to which the pictures can be resized is displayed.

[SINGLE]

[MULTI] setting

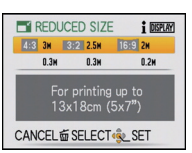
1 **Press ▲/▼ to select the size, and then press [MENU/SET].**

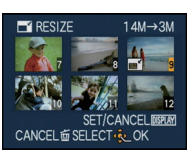
- When [DISPLAY] is pressed, an explanation of resizing is displayed.

2 **Press ▲/▼/◄/► to select the picture, and then press [DISPLAY].**

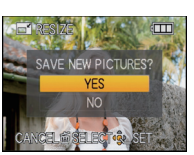
- Repeat this step for each picture, and press [MENU/SET] to set.

[MULTI]





4 **Press ▲ to select [YES] and then press [MENU/SET].**



5 **Press [🗑] to return to the menu screen.***

*The menu screen is automatically restored when [MULTI] is selected.

- Press [MENU/SET] to close the menu.

Note

- You can set up to 50 pictures at one time in [MULTI].
- The picture quality of the resized picture will deteriorate.
- It may not be possible to resize pictures recorded with other equipment.
- Motion pictures, pictures with audio, and pictures stamped with [TEXT STAMP] cannot be resized.

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[CROPPING]

You can enlarge and then crop the important part of the recorded picture.

1 **Select [CROPPING] on the [PLAYBACK] Mode menu.** (P22)

2 **Press ◄/► to select the picture, and then press [MENU/SET].**

3 **Use the zoom lever and press ▲/▼/◄/► to select the parts to be cropped.**

Zoom lever (T): Enlargement
Zoom lever (W): Reduction
▲/▼/◄/►: Move

Reduction ⟷ Enlargement

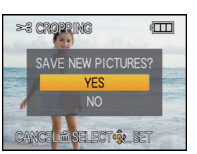
Move the position

4 **Press [MENU/SET].**

5 **Press ▲ to select [YES] and then press [MENU/SET].**

6 **Press [🗑] to return to the menu screen.**

- Press [MENU/SET] to close the menu.



Note

- Depending on the cut size, the picture size of the cropped picture may become smaller than that of the original picture.
- The picture quality of the cropped picture will deteriorate.
- It may not be possible to crop pictures recorded with other equipment.
- Motion pictures, pictures with audio, and pictures stamped with [TEXT STAMP] cannot be cropped.
- Information regarding the Face Recognition in the original picture will not be copied to images having undergone [CROPPING].

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[LEVELING]

Minute levelling of the image can be adjusted.

1 Select [LEVELING] on the [PLAYBACK] Mode menu. (P22)

2 Press ◄/► to select the picture, and then press [MENU/SET].

3 Press ◄/► to adjust the levelling, and press [MENU/SET].

►: **clockwise**
◄: **counter-clockwise**
• Up to 2 ° can be adjusted.

4 Press ▲ to select [YES] and then press [MENU/SET].

5 Press [🗑] to return to the menu screen.

• Press [MENU/SET] to close the menu.

Note

• Quality of image may become coarse when levelling is performed.
• Recorded pixels may decrease compared to original image when levelling is performed.
• Levelling may not be performed on images recorded with other equipment.
• Motion pictures, pictures with audio, and pictures stamped with [TEXT STAMP] cannot be levelled.
• Information regarding the Face Recognition in the original picture will not be copied to images having undergone [LEVELING].

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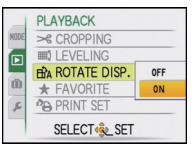
[ROTATE DISP.]

This mode allows you to automatically display pictures vertically if they were recorded holding the camera vertically.

1 **Select [ROTATE DISP.] on the [PLAYBACK] Mode menu. (P22)**

2 **Press ▼ to select [ON] and then press [MENU/SET].**

- The pictures are displayed without being rotated when you select [OFF].
- Refer to P44 for information about how to play back pictures.



3 **Press [MENU/SET] to close the menu.**

Note

- When you play back pictures on a PC, they cannot be displayed in the rotated direction unless the OS or software is compatible with Exif. Exif is a file format for still pictures which allows recording information etc. to be added. It was established by “JEITA (Japan Electronics and Information Technology Industries Association)”.
- It may not be possible to rotate pictures that have been recorded with other equipment.
- The display is not rotated during Multi Playback (P45).

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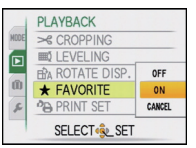
[FAVORITE]

You can do the following if a mark has been added to pictures and they have been set as favourites.
- Play back only the pictures set as favourites. ([FAVORITE PLAY])
- Play back the pictures set as favourites only as a slide show.
- Delete all the pictures not set as favourites. ([ALL DELETE EXCEPT★])

1 Select [FAVORITE] on the [PLAYBACK] Mode menu. (P22)

2 Press ▼ to select [ON] and then press [MENU/SET].

- You cannot set pictures as favourites if [FAVORITE] is set to [OFF]. Also [★] will not appear when [FAVORITE] is set to [OFF] even if it was previously set to [ON].



3 Press [MENU/SET] to close the menu.

4 Press ◄/► to select the picture and then press ▼.

- Repeat the above procedure.
- If ▼ is pressed again, the favourite setting is cancelled.

■ Cancelling all the [FAVORITE] settings

1 Select [CANCEL] on the screen shown in step 2 and then press [MENU/SET].
2 Press ▲ to select [YES] and then press [MENU/SET].
3 Press [MENU/SET] to close the menu.

- You cannot select [CANCEL] if not even one picture has been set as a favourite.

Note
- You can set up to 999 pictures as favourites.
- When printing pictures at a photo printing store, [ALL DELETE EXCEPT★] (P48) is useful so only the pictures you want to be printed remain on the card.
- You may not be able to set pictures taken with other equipment as favourites.

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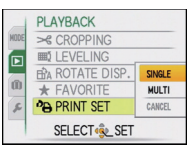
[PRINT SET]

DPOF “Digital Print Order Format” is a system that allows the user to select which pictures to print, how many copies of each picture to print and whether or not to print the recording date on the pictures when using a DPOF compatible photo printer or photo printing store. For details, ask at your photo printing store.
When you want to use a photo printing store to print pictures recorded on the built-in memory, copy them to a card (P143) and then set the print setting.

1 Select [PRINT SET] on the [PLAYBACK] Mode menu. (P22)

2 Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].

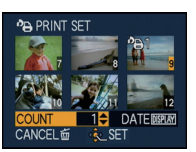


3 Select the picture, and then press [MENU/SET].

[SINGLE]

Press ◄/► to select the picture.

[MULTI]



Press ▲/▼/◄/► to select the pictures.

4 Press ▲/▼ to set the number of prints, and then press [MENU/SET] to set.

- When [MULTI] has been selected, repeat steps **3** and **4** for each picture. (It is not possible to use the same setting for a multiple number of pictures.)

5 Press [🗑] to return to the menu screen.

- Press [MENU/SET] to close the menu.

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■ **Cancelling all the [PRINT SET] settings**

1 Select [CANCEL] on the screen shown in step 2 and then press [MENU/SET].

2 Press ▲ to select [YES] and then press [MENU/SET].

3 Press [MENU/SET] to close the menu.

• You cannot select [CANCEL] if not even one picture has been set for printing.

■ **To print the date**

After setting the number of prints, set/cancel printing with the recording date by pressing [DISPLAY].

• When you go to a photo printing store for digital printing, be sure to order the printing of the date additionally if required.
• Depending on the photo printing store or the printer, the date may not be printed even if you set to print the date. For further information, ask at your photo printing store or refer to the operating instructions for the printer.
• The date cannot be printed on pictures stamped with text.

Note

• The number of prints can be set from 0 to 999.
• With a printer supporting PictBridge, the date print settings of the printer may take precedence so check if this is the case.
• It may not be possible to use the print settings with other equipment. In this case, cancel all the settings, and reset the settings.
• [PRINT SET] cannot be set for motion pictures recorded in [AVCHD Lite].
• If the file is not based on the DCF standard, the print setting cannot be set.

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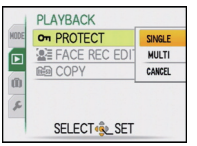
[PROTECT]

You can set protection for pictures you do not want to be deleted by mistake.

1 Select [PROTECT] on the [PLAYBACK] Mode menu. (P22)

2 Press ▲/▼ to select [SINGLE] or [MULTI] and then press [MENU/SET].



3 Select the picture, and then press [MENU/SET].

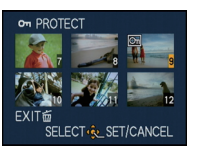
When [MULTI] has been selected

- Repeat these steps for each picture.
- The settings are cancelled when [MENU/SET] is pressed again.

[SINGLE]

Press ◄/► to select the picture.

[MULTI]



Press ▲/▼/◄/► to select the pictures.

4 Press [🗑] to return to the menu screen.

- Press [MENU/SET] to close the menu.

■ Cancelling all the [PROTECT] settings

1 Select [CANCEL] on the screen shown in step 2 and then press [MENU/SET].
2 Press ▲ to select [YES] and then press [MENU/SET].
3 Press [MENU/SET] to close the menu.

- If you press [MENU/SET] while cancelling protection, the cancelling will stop halfway.

Note

- The protect setting may not be effective on other equipment.
- Even if you protect pictures in the built-in memory or a card, they will be deleted if the built-in memory or the card is formatted.
- Even if you do not protect pictures on a card, they cannot be deleted when the card's Write-Protect switch is set to [LOCK].

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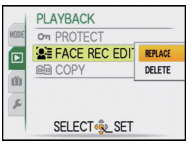
[FACE REC EDIT]

You can delete or change the information relating to Face Recognition for the selected picture.

1 **Select [FACE REC EDIT] on the [PLAYBACK] Mode menu. (P22)**

2 **Press ▲/▼ to select [REPLACE] or [DELETE] and then press [MENU/SET].**



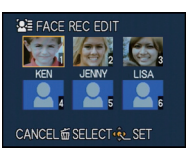
3 **Press ◄/► to select the picture and then press [MENU/SET].**

- You cannot select pictures for which Face Recognition information has not been registered.

4 **Press ◄/► to select the person and then press [MENU/SET].**

- [DELETE] → step **6**.
- You cannot select a person who has not been registered.

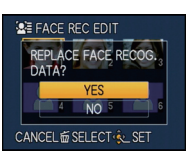
5 **Press ▲/▼/◄/► to select the person to replace and then press [MENU/SET].**



6 **Press ▲ to select [YES] and then press [MENU/SET].**

7 **Press [🗑] to return to the menu screen.**

- Press [MENU/SET] to close the menu.



Note

- Cleared information regarding the [FACE RECOG.] cannot be restored.
- When all Face Recognition information in a picture has been cancelled, the picture will not be categorised using Face Recognition in [CATEGORY PLAY].
- You cannot edit the Face Recognition information of protected pictures.

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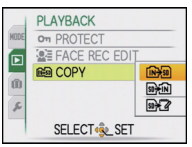
[COPY]

You can copy data of pictures you have shot from the built-in memory onto a card, from a card into the built-in memory or from a card into the dedicated clipboard folder.

- When copying clipboard pictures onto a card, select [COPY] on the clipboard playback menu. (P116)

1 **Select [COPY] on the [PLAYBACK] Mode menu.** **(P22)**

2 **Press ▲/▼ to select the copy destination and then press [MENU/SET].**



[IN→SD]: All the picture data in the built-in memory are copied onto the card at one time. → step **4**.

[SD→IN]: One picture at a time is copied from the card to the built-in memory. → step **3**.

[SD→clipboard]: The images are copied from the card to the dedicated clipboard folder (built-in memory) one at a time. (Motion pictures cannot be copied.) → step **3**.

3 **Press ◄/► to select the picture and then press [MENU/SET].**

4 **Press ▲ to select [YES], and then press [MENU/SET].**

- If you press [MENU/SET] while copying pictures, the copying will stop halfway.
- Do not turn the camera off at any point during the copying process.

5 **Press [🗑] to return to the menu screen.**

- Press [MENU/SET] to close the menu.
- If you copy from the built-in memory to a card, all the pictures are copied and then the screen automatically returns to the playback screen.

Note

- If you copy picture data from the built-in memory to a card which does not have sufficient free space, the picture data will only be copied halfway. We recommend using a card which has more free space than the built-in memory (about 40 MB).
- If a picture exists with the same name (folder number/file number) as the picture to be copied in the copy destination when [IN→SD] is selected, a new folder is created and the picture is copied. If a picture exists with the same name (folder number/file number) as the picture to be copied in the copy destination when [SD→IN] is selected, that picture is not copied. (P173)
- It may take time to copy the picture data.
- Only pictures recorded with a Panasonic digital camera (LUMIX) will be copied. (Even if the pictures were recorded with a Panasonic digital camera, you may not be able to copy them if they were edited with a PC.)
- [PRINT SET] or [PROTECT] settings will not be copied. Perform the settings again after copying is finished.
- Motion picture recorded in [AVCHD Lite] cannot be copied.

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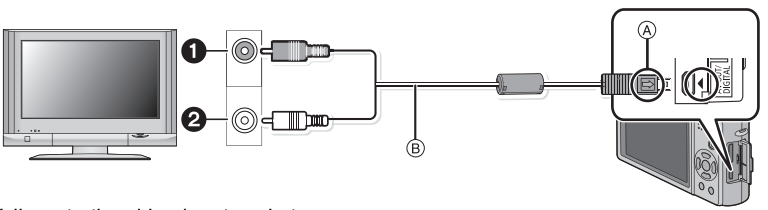
[PLAYBACK] Mode:

Playing Back Pictures on a TV Screen

Playing back pictures using the AV cable (supplied)

Preparations:
Set the [TV ASPECT]. (P28)
Turn this unit and the TV off.



❶ Yellow: to the video input socket
❷ White: to the audio input socket
Ⓐ Align the marks, and insert.
Ⓑ AV cable (supplied)
• Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)

1 Connect the AV cable Ⓑ (supplied) to the video input and the audio input sockets on the TV.

2 Connect the AV cable to the [AV OUT] socket on the camera.

3 Turn the TV on and select external input.

4 Turn the camera on, and slide the [REC]/[PLAYBACK] selector switch to [▶].

Note
• Depending on the [ASPECT RATIO], black bands may be displayed on the top and bottom or the left and right of the pictures.
• Do not use any other AV cables except the supplied one.
• Read the operating instructions for the TV.
• When you play back a picture vertically, it may be blurry.
• You can view pictures on TVs in other countries (regions) which use the NTSC or PAL system when you set [VIDEO OUT] in the [SETUP] menu.

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Playing back pictures on a TV with an SD Memory Card slot

The recorded still pictures can be played back on a TV with an SD Memory Card slot.

Note

- Depending on the TV model, pictures may not be displayed on the full screen.
- Motion pictures recorded with [AVCHD Lite] can be played back on Panasonic TVs (VIERA) with the AVCHD logo mark. In all other cases, connect the camera to the TV using the AV cable (supplied) and playback the motion picture.
- SDHC memory cards and SDXC memory cards can only be played back on compatible televisions.

Playing back on the TV with HDMI socket

You can enjoy high quality pictures and motion pictures on the TV by connecting the camera with the HDMI compatible high definition TV using HDMI mini cable (optional).

What is HDMI?
HDMI is the interface for digital devices. When this unit is connected to a HDMI compatible device, the image and audio can be output with a digital signal. If you connect this unit to a HDMI compatible high definition TV and then play back the recorded high definition images, you can enjoy them in high resolution with high quality sound.
If you connect this unit to a Panasonic TV compatible with VIERA Link, linked operations (VIERA Link) are possible. (P148)

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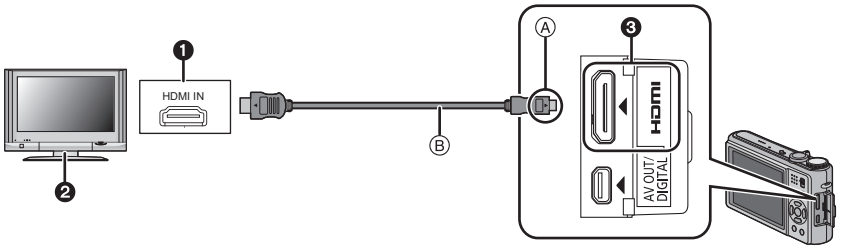
Preparations: Check the [HDMI MODE]. (P29)
Turn this unit and the TV off.



❶ HDMI socket
❷ TV with HDMI socket
❸ HDMI mini (C type)
Ⓐ Align the marks, and insert.
Ⓑ HDMI mini cable (optional)
• Check the direction of the terminals and plug in/out straight holding onto the plug. (It may result in malfunction by the deforming of the terminal if it is plugged in obliquely or in wrong direction.)

1 Connect the HDMI mini cable Ⓑ (optional) to the HDMI input socket on the TV.

2 Connect the HDMI mini cable to the [HDMI] socket on the camera.

3 Turn the TV on and switch to HDMI input.

4 Turn the camera on, and slide the [REC]/[PLAYBACK] selector switch to [▶].

• When [VIERA Link] (P29) is set to [ON] and the camera is connected to a TV supporting VIERA Link, input of the TV will be switched automatically and the playback screen will be displayed (P148).
(Except for Clipboard Mode)

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Note

- Depending on the [ASPECT RATIO], bands may be displayed on the top and bottom or the left and right of the pictures.
- Do not use any other cables except a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).
  Part numbers: RP-CDHM15 (1.5 m) (5 feet), RP-CDHM30 (3.0 m) (10 feet)
- During HDMI output, no picture is displayed on the LCD monitor.
- Output from the HDMI mini cable has priority when both AV cable and HDMI mini cable are connected.
- HDMI output is not possible even if you connect the HDMI mini cable while the unit is connected to the PC or the printer.
- HDMI connection is disabled and connection with the USB connection cable will take priority when you connect the USB connection cable while the HDMI mini cable is connected.
- When pictures are displayed, they may not be displayed properly depending on the type of TV.
- Read the operating instructions for the TV.
- Audio will be played back as monaural.
- Following functions cannot be set in Playback Mode.
  [TITLE EDIT], [VIDEO DIVIDE], [TEXT STAMP], [RESIZE], [CROPPING], [LEVELING], [FACE REC EDIT], [COPY], multiple selection etc.

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Playback using VIERA Link (HDMI) (HDAVI Control™)

What is the VIERA Link?
- This function allows you to use your remote control for the Panasonic TV for easy operations when this unit has been connected to a VIERA Link compatible device using a HDMI mini cable (optional) for automatic linked operations. (Not all operations are possible.)
- VIERA Link is a unique Panasonic function built on a HDMI control function using the standard HDMI CEC (Consumer Electronics Control) specification. Linked operations with HDMI CEC compatible devices made by other companies are not guaranteed. When using devices made by other companies that are compatible with VIERA Link, refer to the operating instructions for the respective devices.
- This unit is compatible with VIERA Link Ver.5. VIERA Link Ver.5 is the newest Panasonic version and is also compatible with existing Panasonic VIERA Link devices. (As of December 2009)

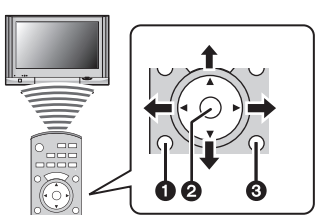
Preparations: Set the [VIERA Link] to [ON]. (P29)

1 Connect this unit to a Panasonic TV compatible with VIERA Link with an HDMI mini cable (optional) (P145).

2 Turn the camera on, and slide the [REC]/[PLAYBACK] selector switch to [▶].

3 Operate with the remote control for the TV.

Panasonic TV compatible with VIERA Link



❶ [OPTION]
❷ [OK]
❸ [RETURN]

✳ The shape of the remote control varies depending on the region. Operate following the TV guide displayed on screen.

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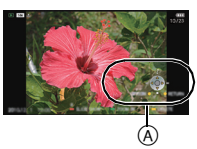
■ **Usable functions**

Operate with the remote control for the TV.

<table>
<tr><td>Multi Playback
 </td><td>This is displayed initially when using the VIERA Link.
▲/▼/◀/▶: Select the image.
[OK]: Go to one screen display.
Red button: Switch the types of data to play back.
[OPTION]: Display the Playback Mode selection screen.
• The type of data for playback changes in the order of [ALL] → [📷] → [🎥] → [🎞] → [ALL].
• Either the [NORMAL PLAY], [SLIDE SHOW], [TRAVEL PLAY], [CATEGORY PLAY], [CALENDAR] or the [FAVORITE PLAY] can be selected in the Playback Mode selection screen.</td></tr>
<tr><td>One screen display
 
Ⓐ</td><td>Select the image while in Multi Playback, and then press [OK].
◀/▶: Go to previous/next image.
▲: Display the recording information.
▼: Return to Multi Playback.
[OK]: Playback the motion picture (when motion picture is selected).
Playback the audio (when picture with audio is selected).
Red button: Start the Slide Show.
[OPTION]: Go to Slide Show setting screen.
• During Motion Picture Playback, use ◀/▶ for back/forward and ▼ to stop playback.</td></tr>
<tr><td>Slide show

Ⓐ</td><td>Press Red button during one screen display.
◀/▶: Go to previous/next image (when Slide Show is paused/when motion picture is played back).
▼: Finish the Slide Show and return to one screen display.
[OK]: Pause.
[OPTION]: Go to Slide Show setting screen.
• To playback the audio of the motion pictures, set the [SOUND] in the Slide Show setting screen to [AUTO] or [AUDIO].</td></tr>
</table>

Ⓐ Operation icon

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Note

- Operation icons are hidden by pressing [RETURN], or if no operation is performed for a while when the operation icons are displayed. Operation icons are displayed when one of the following buttons is pressed while the operation icons are not displayed.
  – ▲/▼/◄/►, [OK], [OPTION], [RETURN], Red button, Green button, Yellow button
- It is recommended to connect this unit to an HDMI terminal other than the HDMI1 if there are 2 or more HDMI input terminals on the TV.
- When the [VIERA Link] (P29) of this unit is set to [ON], operation using the button on this unit will be limited.
- VIERA Link must be activated on the connected TV. (Read the operating instructions of the TV for how to set etc.)
- If you are not using VIERA Link, set [VIERA Link] (P29) to [OFF].

■ Other linked operations

Turning the power off:

If you use the remote control for the TV to turn off the power, the power on this unit also turns off. (When connecting the unit to a PC with a USB cable, the power will not turn off.)

Automatic input switching:

- If you connect with a HDMI mini cable and then turn on the power on this unit, the input channel on the TV automatically switches to this unit's screen. If the TV's power is in standby status, it will turn on automatically (if [Set] has been selected for the TV's [Power on link] setting).
- Depending on the HDMI terminal on the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch the input channel. (For details on how to switch input, please read the operating instructions for the TV.)
- If VIERA Link does not work properly, refer to page 181.

Note

- If you are unsure whether or not the TV you are using is compatible with VIERA Link, read the operating instructions for the TV.
- Available linked operations between this unit and a Panasonic TV is different depending on the types of Panasonic TVs even if they are compatible with VIERA Link. Refer to the operating instructions of the TV for the operations that support the TV.
- Operation is not possible with a cable that is not based on the HDMI standard.
  Do not use any other cables except a genuine Panasonic HDMI mini cable (RP-CDHM15, RP-CDHM30; optional).
  Part numbers: RP-CDHM15 (1.5 m) (5 feet), RP-CDHM30 (3.0 m) (10 feet)
- VIERA Link will not work even if you connect the HDMI mini cable while the unit is connected to the PC or the printer.
- [HDMI MODE] (P29) for this unit is determined automatically when the VIERA Link is operating.
- The resolution may switch automatically when an [AVCHD Lite] motion picture that was recorded with another camera is played back on this unit. The screen may turn black for a while when that occurs, but it is not a malfunction.

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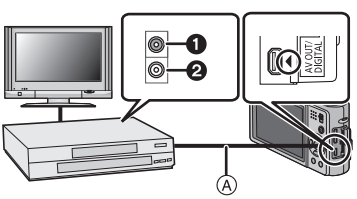
Saving the Recorded Still Pictures and Motion Pictures

Methods to export still pictures and motion pictures to other devices will vary depending on the file format. (JPEG, AVCHD Lite, or Motion JPEG). Here are a few suggestions.

Copy the playback image using an AV cable

File formats that can be used: [AVCHD Lite], [Motion JPEG]
Copy images played back with this unit to DVD disc, hard disk, or video using a DVD recorder, or video.
This can be played back with equipment that is not compatible with high definition (AVCHD), so it is convenient for distributing copies. Image will be standard quality instead of high definition at this time.



❶ Yellow: to the video input socket
❷ White: to the audio input socket
Ⓐ AV cable (supplied)

1 Connect this unit with the recording equipment with an AV cable (supplied).
2 Start the playback of this unit.
3 Start the recording on the recording equipment.
- When ending the recording (copying), stop the playback on this unit after stopping the recording of the recording equipment.

Note
- When you play back motion pictures on 4:3 aspect ratio TV, you must set [TV ASPECT] (P28) on this unit to [4:3] before starting a copy. The image will be vertically long if you play back motion pictures copied with [16:9] setting on a [4:3] aspect TV.
- Do not use any other AV cables except the supplied one.
- It is recommended to turn off the display of the screen by pressing the [DISPLAY] on the camera while copying. (P49)
- See the instruction manual for the recording equipment regarding the details of copying and playing back.

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Copying to a PC using “PHOTOfunSTUDIO 5.0 HD Edition”

File formats that can be used: [JPEG], [AVCHD Lite], [Motion JPEG]
It is possible to acquire still pictures and motion pictures recorded in [AVCHD Lite] or [MOTION JPEG] formats, or create conventional standard quality DVD video from the motion picture that was recorded as [AVCHD Lite], using “PHOTOfunSTUDIO 5.0 HD Edition” in the CD-ROM (supplied). (P153)

Also, you can write images to DVD, combine multiple pictures to create a single panorama picture, or create a slide show by adding audio and/or music. These pictures can then be stored onto a DVD.

1 Install “PHOTOfunSTUDIO 5.0 HD Edition” to the PC.
- Read the separate operating instructions for the supplied software for more information about the software in the CD-ROM (supplied) and how to install it.

2 Connect camera to PC.
- For details on connecting, refer to “Connecting to a PC” (P153).

3 Copy the images to a PC using “PHOTOfunSTUDIO 5.0 HD Edition”.
- For details, refer to the operating instructions of “PHOTOfunSTUDIO 5.0 HD Edition” (PDF).

Note
- You will not be able to playback the acquired [AVCHD Lite] motion pictures when the files or folders related to the motion pictures are deleted, modified, or moved using Windows Explorer or similar, so make sure to acquire the [AVCHD Lite] motion pictures using “PHOTOfunSTUDIO 5.0 HD Edition”.

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Connecting to a PC

You can acquire recorded pictures to a PC by connecting the camera and the PC.

- Some PCs can read directly from the card removed from the camera. For details, refer to the operating instructions of your PC.
- **If the computer being used does not support SDXC Memory Cards, a message prompting you to format may appear. (Doing so will cause recorded images to be erased so do not choose to format.)**
  If the card is not recognised, please refer to the below support site.
  http://panasonic.net/avc/sdcard/information/SDXC.html
- You can easily print out or mail the pictures you have imported. Use of the "PHOTOfunSTUDIO 5.0 HD Edition" bundled software on the CD-ROM (supplied) is a convenient way of doing this.
- Read the separate operating instructions for the supplied software for more information about the software in the CD-ROM (supplied) and how to install it.

■ PC that can be used

	Windows			Macintosh
	98/98SE	Me/2000	XP/Vista/7	OS 9/OS X
Can the PHOTOfunSTUDIO be used?	—		○*1	—
Can the [AVCHD Lite] motion picture be acquired to the PC?	—		○*2	—
Can the still pictures and [MOTION JPEG] motion pictures in the digital camera be acquired to the PC using a USB connection cable?	—	○		○ (OS 9.2.2/OS X [10.1~10.6])

- PC with Windows 98/98SE or older, or Mac OS 8.x or older cannot be connected via USB, but it can acquire the pictures if an SD memory card reader/writer can be used.

*1 It is necessary for Internet Explorer 6.0 or newer to be installed. PC with higher processing performance is required depending on the function to be used. It may not play back correctly or operate correctly depending on the environment of the PC used.

***2 Always acquire the [AVCHD Lite] motion pictures using the "PHOTOfunSTUDIO 5.0 HD Edition".**

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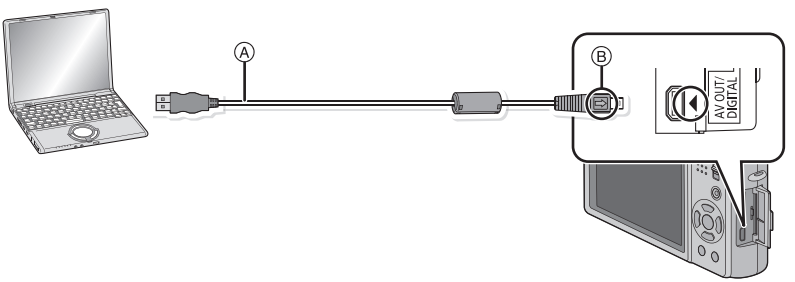
Acquiring of still pictures and [MOTION JPEG] motion pictures (other than [AVCHD Lite] motion pictures)

Preparations:
Turn on the camera and the PC.
Remove the card before using the pictures in the built-in memory.
Set the mode dial to anything except [].



Ⓐ USB connection cable (supplied)
• Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)
Ⓑ Align the marks, and insert.
• Use a battery with sufficient battery power or the AC adaptor (optional) and DC coupler (optional). If the remaining battery power becomes low while the camera and the PC are communicating, the alarm beeps.
Refer to “Disconnecting the USB connection cable safely” (P155) before disconnecting the USB connection cable. Otherwise, data may be destroyed.

1 Connect the camera to a PC via the USB connection cable Ⓐ (supplied).

• Do not use any other USB connection cables except the supplied one.
Use of cables other than the supplied USB connection cable may cause malfunction.

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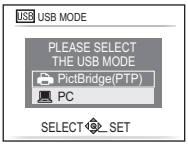

2 Press ▲/▼ to select [PC], and then press [MENU/SET].

- If [USB MODE] (P28) is set to [PC] in the [SETUP] menu in advance, the camera will be automatically connected to the PC without displaying the [USB MODE] selection screen. Since there is no need to set this each time you connect to the PC, it is convenient.
- When the camera has been connected to the PC with [USB MODE] set to [PictBridge(PTP)], a message may appear on the PC's screen. Select [Cancel] to close the screen, and disconnect the camera from the PC. Then set [USB MODE] to [PC] again.

3 Double-click on [Removable Disk] in [My Computer].

- When using a Macintosh, the drive is displayed on the desktop. ("LUMIX", "NO_NAME" or "Untitled" is displayed.)

4 Double-click [DCIM] folder.

5 Using a drag-and-drop operation, move the pictures you want to acquire or the folder storing those pictures to any different folder on the PC.

■ Disconnecting the USB connection cable safely

- Proceed with the hardware removal using "Safely Remove Hardware" on the task tray of the PC. If the icon is not displayed, check that [ACCESS] is not displayed on the LCD monitor of the digital camera before removing the hardware.

Note

- This unit cannot stand upright when the AC adaptor is connected. When placing it on a surface and operating it, we recommend placing it on a soft cloth.
- Turn the camera off before connecting or disconnecting the AC adaptor (optional).
- Before inserting or removing a card, turn the camera off and disconnect the USB connection cable. Otherwise, data may be destroyed.
- If the camera is connected in Clipboard Mode, the built-in memory data is displayed even if a card is inserted.

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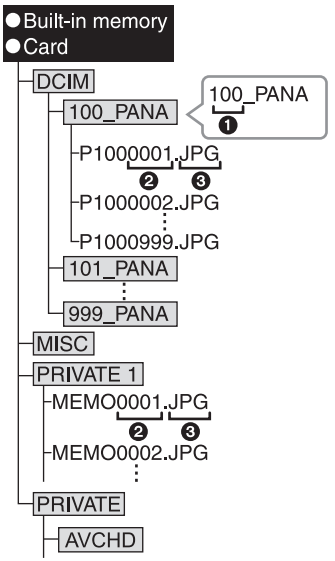
■ Viewing the contents of the built-in memory or card using the PC (folder composition)

Folders and images processed in the PC cannot be played back on the camera. It is recommended to use the "PHOTOfunSTUDIO 5.0 HD Edition" bundled software on the CD-ROM (supplied) when you write the image from PC to a card.



❶	Folder number	
❷	File number	
❸	JPG:	Pictures
	MOV:	[MOTION JPEG]
MISC:		DPOF print
		Favourite
PRIVATE1: (Built in memory only)		Clipboard pictures
AVCHD:		[AVCHD Lite] Motion pictures

A new folder is created when pictures are taken in the following situations.

- After [NO.RESET] (P27) in the [SETUP] menu has been executed
- When a card containing a folder with the same folder number has been inserted (Such as when pictures were taken using another make of camera)
- When there is a picture with file number 999 inside the folder

■ Connection in the PTP Mode (Windows® XP, Windows Vista®, Windows® 7 and Mac OS X only)

Set [USB MODE] to [PictBridge(PTP)].
Data can now be read only from the card into the PC.

- When there are 1000 or more pictures on a card, the pictures may not be imported in the PTP Mode.
- [AVCHD Lite] motion picture cannot be played back in PTP Mode.

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Printing the Pictures

If you connect the camera to a printer supporting PictBridge, you can select the pictures to be printed out and instruct that printing be started from the camera's LCD monitor.

- Some printers can print directly from the card removed from the camera. For details, refer to the operating instructions of your printer.

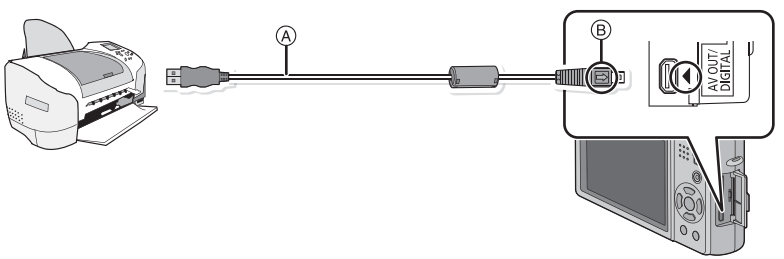
Preparations:

Turn on the camera and the printer.

Remove the card before printing the pictures from the built-in memory.

Perform the print quality and other settings at the printer before printing the pictures.

Set the mode dial to anything except [].



Ⓐ USB connection cable (supplied)

- Check the directions of the connectors, and plug them straight in or unplug them straight out. (Otherwise the connectors may be bent out of shape which may cause malfunction.)

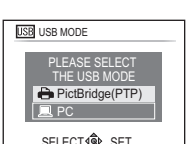
Ⓑ Align the marks, and insert.

- Use a battery with sufficient battery power or the AC adaptor (optional) and DC coupler (optional). If the remaining battery power becomes low while the camera and the printer are connected, the alarm beeps. If this happens during printing, stop printing at once. If not printing, disconnect the USB connection cable.

1 Connect the camera to a printer via the USB connection cable Ⓐ (supplied).

- When the camera is connected to the printer, the cable disconnect prohibit icon [] appears. Do not disconnect the USB cable while [] is displayed.

2 Press ▲/▼ to select [PictBridge(PTP)], and then press [MENU/SET].



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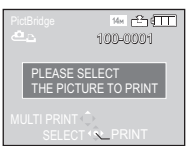
Note

- This unit cannot stand upright when the AC adaptor is connected. When placing it on a surface and operating it, we recommend placing it on a soft cloth.
- Do not use any other USB connection cables except the supplied one.
  Use of cables other than the supplied USB connection cable may cause malfunction.
- Turn the camera off before connecting or disconnecting the AC adaptor (optional).
- Before inserting or removing a card, turn the camera off, and disconnect the USB connection cable.
- You cannot switch between the built-in memory and the card while the camera is connected to the printer. Disconnect the USB connection cable, insert (or remove) the card and then connect the USB connection cable to the printer again.
- Copy the pictures recorded in Clipboard Mode, copy them onto a card (P116), and then print them out.
- Motion pictures recorded in [AVCHD Lite] cannot be printed out.

Selecting a single picture and printing it

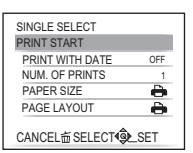
1 Press ◄/► to select the picture and then press [MENU/SET].

- The message disappears in about 2 seconds.



2 Press ▲ to select [PRINT START] and then press [MENU/SET].

- Refer to P160 for the items which can be set before starting to print the pictures.
- Press [MENU/SET] to cancel printing halfway.
- Disconnect the USB connection cable after printing.



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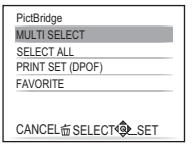
Selecting multiple pictures and printing them

1 Press ▲.

2 Press ▲/▼ to select an item and then press [MENU/SET].

- If the print check screen has appeared, select [YES], and print the pictures.

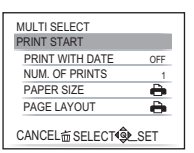


Item	Description of settings
[MULTI SELECT]	Multiple pictures are printed at one time. • Press ▲/▼/◄/► to select the pictures, and then When [DISPLAY] is pressed, [] appears on the pictures to be printed. (When [DISPLAY] is pressed again, the setting is cancelled.) • After the pictures have been selected, press [MENU/SET].
[SELECT ALL]	Prints all the stored pictures.
[PRINT SET (DPOF)]	Prints the pictures set in [PRINT SET] only. (P139)
[FAVORITE]✳	Prints the pictures set as favourites only. (P138)

✳ Only when [FAVORITE] is at [ON] and when there are pictures set as favourites. (P138)

3 Press ▲ to select [PRINT START] and then press [MENU/SET].

- Refer to P160 for the items which can be set before starting to print the pictures.
- Press [MENU/SET] to cancel printing.
- Disconnect the USB connection cable after printing.



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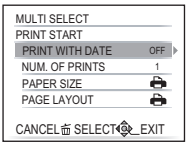
Print Settings

Select and set the items both on the screen in step 2 of the "Selecting a single picture and printing it" and in step 3 of the "Selecting multiple pictures and printing them" procedures.



- When you want to print pictures on a paper size or a layout which is not supported by the camera, set [PAPER SIZE] or [PAGE LAYOUT] to [🖨] and then set the paper size or the layout on the printer. (For details, refer to the operating instructions of the printer.)
- When [PRINT SET (DPOF)] has been selected, the [PRINT WITH DATE] and [NUM. OF PRINTS] items are not displayed.

[PRINT WITH DATE]

Item	Description of settings
[OFF]	Date is not printed.
[ON]	Date is printed.

- If the printer does not support date printing, the date cannot be printed on the picture.
- Since the printer's settings may take precedence over the Print With Date setting, check the printer's Print With Date setting as well.
- When printing images with a Text Stamp, please remember to set Print With Date to [OFF] or the date will print on top.

Note

When asking the photo shop to print the pictures

- By stamping the date using [TEXT STAMP] (P131) or setting date printing in [PRINT SET] (P139) before going to a photo shop, the dates can be printed at the photo shop.

[NUM. OF PRINTS]

You can set the number of prints up to 999.

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[PAPER SIZE]

Item	Description of settings
🖶	Settings on the printer are prioritised.
[L/3.5″×5″]	89 mm×127 mm
[2L/5″×7″]	127 mm×178 mm
[POSTCARD]	100 mm×148 mm
[16:9]	101.6 mm×180.6 mm
[A4]	210 mm×297 mm
[A3]	297 mm×420 mm
[10×15cm]	100 mm×150 mm
[4″×6″]	101.6 mm×152.4 mm
[8″×10″]	203.2 mm×254 mm
[LETTER]	216 mm×279.4 mm
[CARD SIZE]	54 mm×85.6 mm

• Paper sizes not supported by the printer will not be displayed.

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[PAGE LAYOUT] (Layouts for printing that can be set with this unit)

Item	Description of settings
	Settings on the printer are prioritised.
	1 picture with no frame on 1 page
	1 picture with a frame on 1 page
	2 pictures on 1 page
	4 pictures on 1 page

• An item cannot be selected if the printer does not support the page layout.

■ Layout printing

When printing a picture several times on 1 sheet of paper

For example, if you want to print the same picture 4 times on 1 sheet of paper, set [PAGE LAYOUT] to [ ] and then set [NUM. OF PRINTS] to 4 for the picture that you want to print.

When printing different pictures on 1 sheet of paper

For example, if you want to print 4 different pictures on 1 sheet of paper, set [PAGE LAYOUT] to [ ] and then set [NUM. OF PRINTS] to 1 for each of the 4 pictures.

Note

• The camera is receiving an error message from the printer when the [●] indication lights orange during printing. After finishing printing, make sure there are no problems with the printer.
• If the number of prints is high, the pictures may be printed several times. In this case, the remaining number of prints indicated may differ from the number set.

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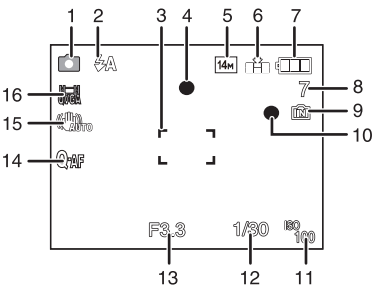
Screen Display

■ **In recording**

Recording in Normal Picture Mode [📷] (Initial setting)



1 Recording Mode
2 Flash Mode (P51)
3 AF area (P39)
4 Focus (P39)
5 Picture size (P95)
6 Quality (P96)
7 Battery indication (P11)
8 Number of recordable pictures*1 (P184)
9 Built-in memory (P16)
: Card (P16) (displayed only during recording)
10 Recording state
11 ISO sensitivity (P98)
12 Shutter speed (P39)
13 Aperture value (P39)
14 Quick AF (P104)
15 Optical Image Stabilizer (P109)/: Jitter alert (P40)
16 REC MODE (P81)/Recording quality (P81)

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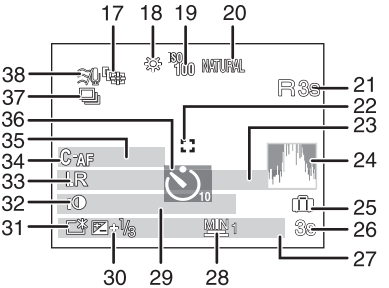
■ **In recording (after settings)**



17 AF Tracking (P103)
AF: AF Macro Mode (P56)
: Macro Zoom Mode (P57)
18 White Balance (P99)
19 ISO sensitivity (P98)
maximum ISO sensitivity level (P97)
20 Colour Mode (P108)
21 Available recording time (P78): R8m30s
22 Spot AF area (P101)
23 Name*2 (P68)
24 Histogram (P50)
25 Travel Date (P91)
26 Elapsed recording time (P78)
AF tracking operation (P36, 103)
ISO: Intelligent ISO (P97)
27 Current date and time/: Travel destination setting*3 (P93)
Zoom/Extra Optical Zoom (P41)/Digital Zoom (P41, 107)/Intelligent Zoom (P41):
EZ i.ZOOM W T 1X
28 Minimum shutter speed (P105)
29 Age*2 (P68)
Location*3 (P91)
30 Exposure Compensation (P59)
31 LCD Mode (P25)/
ECO: LCD Power Save (P26)
32 Intelligent Exposure (P104)
33 Intelligent Resolution (P107)
34 Continuous AF (P104)/ AFL: AF Lock ([UNDERWATER]) (P76)/ AF✻: AF Assist Lamp (P111)
35 Number of days that have passed since the departure date (P91)
36 Self-timer Mode (P58)
37 Burst (P106)/: Auto Bracket (P60)/: Audio Recording (P110)
38 Wind cut (P112)

*1 [+99999] is displayed if there are more than 100000 pictures remaining.
*2 This is displayed for about 5 seconds when this unit is turned on in [BABY1]/[BABY2] or [PET] in Scene Mode.
*3 This is displayed for about 5 seconds when the camera is turned on, after setting the clock and after switching from Playback Mode to Recording Mode.

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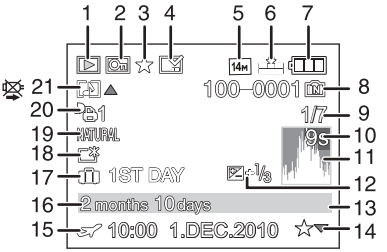
■ **In playback**



1 Playback Mode (P44)
2 Protected picture (P141)
3 Favourites (P138)
: Zoom mark (P115)
4 Stamped with text indication (P131)
5 Picture size (P95)
6 Quality (P96)
7 Battery indication (P11)
8 Folder/File number (P156)
Built-in memory (P16)
Elapsed playback time (P125): 8m30s
9 Picture number/Total pictures
10 Motion picture recording time (P125): 8m30s
11 Histogram (P50)
12 Exposure Compensation (P59)
13 Recording information (P49)
14 Favourites settings (P138)
15 Recorded date and time/World Time (P93)/Name* (P68, 87)/Location* (P92)/Title* (P129)
16 Age (P68)
17 Number of days that have passed since the departure date (P91)
18 Power LCD (P25)
: LCD Power Save (P26)
19 Colour Mode (P108)
20 Number of prints (P139)
21 Audio playback (P125)
/: Motion Picture Playback (P125)/ / : Recording quality (P81)
Cable disconnection warning icon (P157)

* It is displayed in order of [TITLE], [LOCATION], [NAME] ([BABY1]/[BABY2], [PET]), [NAME] ([FACE RECOG.]).

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Cautions for Use

Optimal use of the camera

Keep the camera as far away as possible from electromagnetic equipment (such as microwave ovens, TVs, video games etc.).

- If you use the camera on top of or near a TV, the pictures and sound on the camera may be disrupted by electromagnetic wave radiation.
- Do not use the camera near cell phones because doing so may result in noise adversely affecting the pictures and sound.
- Recorded data may be damaged, or pictures may be distorted, by strong magnetic fields created by speakers or large motors.
- Electromagnetic wave radiation generated by microprocessors may adversely affect the camera, disturbing the pictures and sound.
- If the camera is adversely affected by electromagnetic equipment and stops functioning properly, turn the camera off and remove the battery or disconnect AC adaptor (optional). Then reinsert the battery or reconnect AC adaptor and turn the camera on.

Do not use the camera near radio transmitters or high-voltage lines.

- If you record near radio transmitters or high-voltage lines, the recorded pictures and sound may be adversely affected.

Always use the supplied cords and cables. If you use optional accessories, use the cords and the cables supplied with them.
Do not extend the cords or the cables.

Do not spray the camera with insecticides or volatile chemicals.

- If the camera is sprayed with such chemicals, the body of the camera may be damaged and the surface finish may peel off.
- Do not keep rubber or plastic products in contact with the camera for a long period of time.

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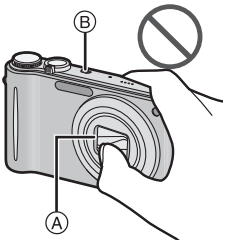
Care of the camera

- **Do not touch the lens or the sockets with dirty hands. Also, be careful not to allow liquids, sand and other foreign matter to get into the space around the lens, buttons etc.**
- **Do not touch the lens barrier Ⓐ. (Doing so may damage the camera. Be careful when taking the camera out of a bag etc.)**
- **If the lens gets dirty, turn on the power and deploy the lens barrel. Then hold the lens barrel between your fingers and lightly wipe the lens surface with a soft dry cloth. (If you leave fingerprints on or otherwise dirty the lens, the pictures you take may look whiter than normal.)**
  (Ⓑ: Camera ON/OFF switch)



- **Do not leave the camera with the lens facing the sun.**
- **Do not strongly shake or bump the camera by dropping or hitting it. Do not subject to strong pressure.**
  The camera may malfunction, recording pictures may become impossible, or the lens, the LCD monitor or the external case may be damaged.
- We strongly recommend you do not leave the camera in your trousers pocket when you sit down or forcefully insert it into a full or tight bag etc.
  Damage to the LCD monitor or personal injury may result.
- Do not attach any other items to the hand strap that's included with your camera. While being stored, that item can rest against the LCD monitor and damage it.
- **Be particularly careful in the following places as they may cause this unit to malfunction.**
  – Places with a lot of sand or dust.
  – Places where water can come into contact with this unit such as when using it on a rainy day or on a beach.
- **This camera is not waterproof. If water or seawater splashes on the camera, use a dry cloth to wipe the camera body carefully.**
  If the unit does not operate normally, please contact the dealer where you purchased the camera or the repair service centre.

About Condensation (When the lens is fogged up)

- Condensation occurs when the ambient temperature or humidity changes. Be careful of condensation since it causes lens stains, fungus and camera malfunction.
- If condensation occurs, turn the camera off and leave it for about 2 hours. The fog will disappear naturally when the temperature of the camera becomes close to the ambient temperature.

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Cleaning

Before cleaning the camera, remove the battery or the DC coupler (optional), or disconnect the power plug from the outlet. Then wipe the camera with a dry soft cloth.

- When the camera is soiled badly, it can be cleaned by wiping the dirt off with a wrung wet cloth, and then with a dry cloth.
- Do not use solvents such as benzine, thinner, alcohol, kitchen detergents, etc., to clean the camera, since it may deteriorate the external case or the coating may peel off.
- When using a chemical cloth, be sure to follow the accompanying instructions.

About the LCD monitor

- Do not press the LCD monitor with excessive force. Uneven colours may appear on the LCD monitor and it may malfunction.
- If the camera is cold when you turn it on, the picture on the LCD monitor will be slightly darker than usual at first. However, the picture will return to normal brightness when the internal temperature of the camera increases.

Extremely high precision technology is employed to produce the LCD monitor screen. However, there may be some dark or bright spots (red, blue or green) on the screen. This is not a malfunction. The LCD monitor screen has more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. The spots will not be recorded on pictures on the built-in memory or a card.

About the Lens

- Do not press against the lens with excessive force.
- Do not leave the camera with the lens facing the sun, as rays of light from the sun may cause it to malfunction. Also, be careful when placing the camera outside or near a window.

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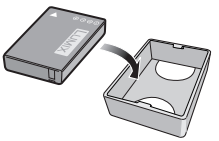
Battery

The battery is a rechargeable lithium ion battery. Its ability to generate power comes from the chemical reaction that takes place inside it. This reaction is susceptible to the surrounding temperature and humidity. If the temperature is too high or too low, the operating time of the battery will become shorter.

Always remove the battery after use.
- Store the removed battery in the battery case (supplied).



If you drop the battery accidentally, check to see if the body of the battery and the terminals are damaged.
- Inserting a damaged battery in the camera will damage the camera.

Bring charged spare batteries when going out.
- Be aware that the operating time of the battery becomes shorter in low temperature conditions such as at a ski resort.
- When you travel, do not forget to bring the battery charger (supplied) so that you can charge the battery in the country that you are travelling in.

Dispose of unusable battery.
- The battery has a limited life.
- Do not throw the battery into fire because it may cause an explosion.

Do not allow battery terminals to come into contact with metal objects (such as necklaces, hairpins etc.).
- This can cause short circuiting or heat generation and you may be badly burned if you touch a battery.

Charger

- If you use the battery charger near a radio, the radio reception may be disturbed.
- Keep the charger 1 m (3.28 feet) or more away from radios.
- The charger may generate whirring sounds when it is being used. This is not a malfunction.
- After use, be sure to disconnect the power supply device from the electrical outlet. (A very small amount of current is consumed if it is left connected.)
- Keep the terminals of the charger and battery clean.

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Card

Do not leave the card where the temperature is high, where electromagnetic waves or static electricity are easily generated or exposed to direct sunlight.
Do not bend or drop the card.
- The card may be damaged or the recorded content may be damaged or deleted.
- Put the card in the card case or the storage bag after use and when storing or carrying the card.
- Do not allow dirt, dust or water to get into the terminals on the back of the card and do not touch the terminals with your fingers.

Notice for when transferring to another party, or disposing of the memory card
- "Format" or "delete" using the camera or a PC will only modify the file management information, and it will not erase the data in the memory card completely.
  It is recommended to physically destroy the memory card or use the commercially available computer data deletion software to completely erase the data in the memory card before transferring to another party or disposing.
  Management of data in the memory card is the responsibility of the user.

About the personal information

If a name or birthday is set for [BABY1]/[BABY2]/Face Recognition function, this personal information is kept in the camera and included in the recorded image.

Disclaimer
- Information including personal information may be altered or vanish due to erroneous operation, effect of static electricity, accident, malfunction, repair, or other handlings.
  Please note in advance that Panasonic is not liable in any way for any direct or indirect damage from the alteration or vanishing of information or personal information.

When requesting a repair, transferring to another party or disposing
- Reset the settings to protect the personal information. (P27)
- If there are pictures stored in the built-in memory, copy them into the memory card (P143) before formatting the built-in memory (P30) as needed.
- Remove the memory card from the camera when requesting a repair.
- Built-in memory and settings may return to factory default when camera is repaired.
- Please contact the dealer where you purchased the camera or your nearest Service Centre if above operations are not possible due to malfunction.

When transferring to another party, or disposing of the memory card, please refer to "Notice for when transferring to another party, or disposing of the memory card" on P170.

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When not using the camera for a long period of time

- Store the battery in a cool and dry place with a relatively stable temperature: (Recommended temperature:15 °C to 25 °C, Recommended humidity: 40% to 60%)
- Always remove the battery and the card from the camera.
- If the battery is left inserted in the camera, it will discharge even if the camera is turned off. If the battery continues to be left in the camera, it will discharge excessively and may become unusable even if charged.
- When storing the battery for a long period of time, we recommend charging it once a year. Remove the battery from the camera and store it again after it has completely discharged.
- We recommend storing the camera with a desiccant (silica gel) when you keep it in a closet or a cabinet.

About the picture data

- Recorded data may be damaged or lost if the camera breaks down due to inappropriate handling. Panasonic will not be liable for any damage suffered due to loss of recorded data.

About tripods or unipods

- When you use a tripod, make sure the tripod is stable when this unit is attached to it.
- You may not be able to remove the card or the battery when using a tripod or unipod.
- Make sure that the screw on the tripod or unipod is not at an angle when attaching or detaching the camera. You may damage the screw on the camera if you use excessive force when turning it. Also, the camera body and the rating label may be damaged or scratched if the camera is attached too tightly to the tripod or unipod.
- Read the operating instructions for the tripod or unipod carefully.
- Some tripods or unipods cannot be attached when the DC coupler (optional) and AC adaptor (optional) are connected.

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Message Display

Confirmation messages or error messages will be displayed on the screen in some cases. The major messages are described below as examples.

[THIS MEMORY CARD IS WRITE-PROTECTED]

→ The Write-Protect switch on the card is moved to [LOCK]. Move the switch back to unlock it. (P17)

[NO VALID PICTURE TO PLAY]

→ Record a picture or insert a card with a recorded picture and then play it.

[THIS PICTURE IS PROTECTED]

→ Delete the picture after cancelling the protect setting. (P141)

[THIS PICTURE CANNOT BE DELETED]/[SOME PICTURES CANNOT BE DELETED]

- Pictures not based on the DCF standard cannot be deleted.
  → If you want to delete some pictures, format the card after saving necessary data on a PC etc. (P30)

[NO ADDITIONAL SELECTIONS CAN BE MADE]

- The number of pictures, which can be set at one time when [MULTI] has been selected for [DELETE MULTI] (P48), [FAVORITE] (P138), [TITLE EDIT] (P129), [TEXT STAMP] (P131) or [RESIZE] (P134) has been exceeded.
  → Reduce the number of pictures set, and then repeat the operation.
- More than 999 favourites have been set.

[CANNOT BE SET ON THIS PICTURE]

- [TITLE EDIT], [TEXT STAMP] or [PRINT SET] cannot be set for pictures not based on the DCF standard.

[NOT ENOUGH SPACE ON BUILT-IN MEMORY]/[NOT ENOUGH MEMORY ON THE CARD]

- There is no space left on the built-in memory or the card.
  – When you copy pictures from the built-in memory to the card (batch copy), the pictures are copied until the capacity of the card becomes full.

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[SOME PICTURES CANNOT BE COPIED]/[COPY COULD NOT BE COMPLETED]

- The following pictures cannot be copied.
  – When a picture with the same name as the picture to be copied exists in the copy destination. (Only when copying from a card to the built-in memory.)
  – Files not based on the DCF standard.
- Moreover, pictures recorded or edited by other equipment may not be copied.

[BUILT-IN MEMORY ERROR FORMAT BUILT-IN MEMORY?]

- This message will be displayed when you format the built-in memory on a PC.
  → Format the built-in memory on the camera again. (P30) The data on the built-in memory will be deleted.

[MEMORY CARD ERROR FORMAT THIS CARD?]

- It is a format that cannot be used with this unit.
  → Format the card again with the camera after saving necessary data on a PC etc. (P30)

[PLEASE TURN CAMERA OFF AND THEN ON AGAIN]/[SYSTEM ERROR]

- This message appears when the camera is not operating properly.
  → Turn the camera off and on. If the message persists, contact the dealer or your nearest Service Centre.

[MEMORY CARD PARAMETER ERROR]/[THIS MEMORY CARD CANNOT BE USED]

→ Use a card compatible with this unit. (P17)
- SD Memory Card (8 MB to 2 GB)
- SDHC Memory Card (4 GB to 32 GB)
- SDXC Memory Card (48 GB to 64 GB)

[INSERT SD CARD AGAIN]/[TRY ANOTHER CARD]

- An error has occurred accessing the card.
  → Insert the card again.
  → Insert a different card.

[READ ERROR/WRITE ERROR PLEASE CHECK THE CARD]

- It has failed to read or write data.
  → Remove the card after turning the power [OFF]. Insert the card again, turn the power on, and try to read or write the data again.
- The card may be broken.
  → Insert a different card.

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[MOTION RECORDING WAS CANCELLED DUE TO THE LIMITATION OF THE WRITING SPEED OF THE CARD]

- Use a card with SD Speed Class* with “Class 4” or higher when recording motion pictures in [AVCHD Lite].
  Also, use a card with SD Speed Class with “Class 6” or higher when recording motion pictures in [MOTION JPEG].
  * SD Speed Class is the speed standard regarding continuous writing.
- In the event that it stops even after using a “Class 4” card or higher, the data writing speed has deteriorated so it is recommended to make a backup and then format (P30).
- Depending on the type of the card, motion picture recording may stop in the middle.

[THIS CARD IS NOT FORMATTED WITH THIS CAMERA, AND NOT SUITABLE FOR MOVIE RECORDING.]

- The writing speed is lower if the card has been formatted using a PC or other equipment. As a consequence, motion picture recording may stop in the middle. If this happens, make a backup of the data and format (P30) the card in this unit.

[CANNOT RECORD DUE TO INCOMPATIBLE FORMAT(NTSC/PAL) DATA ON THIS CARD.]

- This card is for a different recording format, so cannot be used. Save the data on the card to a PC, and use the card after formatting it with this unit.

[A FOLDER CANNOT BE CREATED]

- A folder cannot be created because there are no remaining folder numbers that can be used. (P156)
  → Format the card after saving necessary data on a PC etc. (P30) If you execute [NO.RESET] in the [SETUP] menu after formatting, the folder number is reset to 100. (P27)

[PICTURE IS DISPLAYED FOR 16:9 TV]/[PICTURE IS DISPLAYED FOR 4:3 TV]

- The AV cable is connected to the camera.
  → Press [MENU/SET] if you want to delete this message at once.
  → Select [TV ASPECT] in the [SETUP] menu if you want to change the TV aspect. (P28)
- This message also appears when the USB connection cable is connected to the camera only. In this case, connect the other end of the USB connection cable to a PC or a printer. (P154, 157)

[PRINTER BUSY]/[PLEASE CHECK THE PRINTER]

- The printer cannot print.
  → Check the printer.

[NO BATTERY POWER REMAINS]

- The remaining battery power is low.
  → Charge the battery.

[THIS BATTERY CANNOT BE USED]

- The battery cannot be recognised by the camera.
  → Use a genuine Panasonic battery. If this message is displayed even when a genuine Panasonic battery is used, contact the dealer or your nearest Service Centre.
- The battery cannot be recognised as its terminal is dirty.
  → Remove any dirt etc. from the terminal.

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Troubleshooting

First, try out the following procedures (P175–183).

If the problem is not resolved, **it may be improved by selecting [RESET] (P27) on the [SETUP] menu when taking pictures**.

Battery and power source

The camera cannot be operated even when it is turned on.

- The battery is not inserted correctly. (P14)
- The battery is exhausted.

The LCD monitor turns off while the camera is turned on.

- Is [SLEEP MODE] (P26) of the [ECONOMY] Mode active?
  → Press the shutter button halfway to cancel this mode.
- The battery is exhausted.

The camera turns off immediately after it is turned on.

- The battery is exhausted.
- If you leave the camera on, the battery will be exhausted.
  → Turn the camera off frequently by using the [ECONOMY] Mode etc. (P26)

This unit is turned off automatically.

- If you connect to a TV compatible with VIERA Link with a HDMI mini cable (optional) and turn off the power on the TV with the remote control for the TV, the power on this unit also turns off.
  → If you are not using VIERA Link, set [VIERA Link] to [OFF]. (P29)

The [CHARGE] lamp flashes.

- Is the temperature of the battery excessively high or low? If it is, it will take longer than usual to charge the battery or charging may remain incomplete.
- Are the terminals of the charger or battery dirty?
  → Wipe off the dirt using a dry cloth.

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Recording

The picture cannot be recorded.

- Is the [REC]/[PLAYBACK] selector switch at the [📷] setting? (P31)
- Is the mode dial correctly set?
- Is there any memory remaining on the built-in memory or the card?
  → Delete the pictures which are not necessary to increase the available memory. (P47)

The recorded picture is whitish.

- The picture can become whitish if there is dirt e.g. fingerprints on the lens.
  → If the lens is dirty, turn on the camera, eject the lens barrel (P8) and gently wipe the lens surface with a soft dry cloth.

The area around where the pictures were taken becomes dark.

- Was this picture taken with the flash at the close range when the zoom was near [W] (1×)?
  → Zoom in a little, and then take the pictures. (P41)
- Was this a picture taken in [PIN HOLE] in Scene Mode?

The recorded picture is too bright or dark.

→ Check that the exposure is correctly compensated. (P59)

- Setting the [MIN. SHTR SPEED] to faster speed might make the picture darker.
  → Set the [MIN. SHTR SPEED] (P105) to slower speed.

2 or 3 pictures are taken at one time.

→ Set Auto Bracket (P60), [HI-SPEED BURST] (P70), [FLASH BURST] (P71) in Scene Mode or [BURST] (P106) of the [REC] Mode menu to [OFF].

The subject is not focused properly.

- The focus range varies depending on the Recording Mode.
  → Set to the proper mode for the distance to the subject.
- The subject is beyond the focus range of the camera. (P38)
- There is camera shake (jitter) or the subject is moving slightly. (P40)

The recorded picture is blurred.
The Optical Image Stabilizer is not effective.

→ The shutter speed becomes slower when pictures are taken in dark places so hold the camera firmly with both hands to take the pictures. (P33)
→ When taking pictures at a slow shutter speed, use the self-timer. (P58)

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Taking pictures using Auto Bracket is not possible.

- Is the number of recordable pictures 2 or less?

The recorded picture looks rough.
Noise appears on the picture.

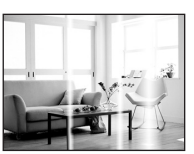
- Is the ISO sensitivity high or the shutter speed slow?
  (ISO sensitivity is set to [AUTO] when the camera is shipped. Therefore, when taking pictures indoors etc. noise will appear.)
  → Decrease the ISO sensitivity. (P98)
  → Set [COLOR MODE] to [NATURAL]. (P108)
  → Take pictures in bright places.
- Has [HIGH SENS.] or [HI-SPEED BURST] in the Scene Mode been set? If so, the resolution of the recorded picture decreases slightly because of high sensitivity processing, but this is not a malfunction.

The brightness or the hue of the recorded picture is different from the actual scene.

- If recording under fluorescent light, the brightness or the hue may change slightly when the shutter speed becomes fast. This occurs due to the characteristics of fluorescent light. It is not a malfunction.

When recording pictures or half-pressing the shutter button, reddish stripes may appear on the LCD monitor. Alternatively, part or all of the LCD monitor may turn a reddish colour.

- This is a characteristic of CCDs, and it appears when the subject has a bright part. Some unevenness may occur in the surrounding areas, but this is not a malfunction.
  It is recorded in motion pictures but is not recorded on still pictures.
- It is recommended that you take pictures while taking care not to expose the screen to sunlight or any other source of strong light.



Motion picture recording stops in the middle.

- Use a card with SD Speed Class＊ with “Class 4” or higher when recording motion pictures in [AVCHD Lite].
  Also, use a card with SD Speed Class with “Class 6” or higher when recording motion pictures in [MOTION JPEG].
  ＊ SD Speed Class is the speed standard regarding continuous writing.
- Depending on the type of the card, recording may stop in the middle.
  → If motion picture recording stops during use of a card of at least “Class 4” or if you use a card that has been formatted on a PC or other equipment, the data-writing speed is lower. In such cases, we recommend that you make a backup of the data and then format (P30) the card in this unit.

The subject cannot be locked. (AF track fails)

- If the subject has different colours as the periphery, set the AF area to those colours specific to the subject by aligning that area with the AF area. (P103)

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Lens

Recorded image may be warped, or nonexistent colour is surrounding the subject.

- It is possible that the subject may be warped slightly, or the borders get coloured, depending on the zoom magnification, due to the characteristics of the lens. Also, the peripherals of the image might look warped because the perspective is enhanced when the wide angle is used. This is not a malfunction.

LCD monitor

The LCD monitor turns off although the camera is turned on.

- LCD monitor will turn off when [SLEEP MODE] (P26) of the [ECONOMY] Mode is activated. [This does not happen when using the AC adaptor (optional).]

The LCD monitor becomes darker or brighter for a moment.

- This phenomenon appears when you press the shutter button halfway to set the aperture value and does not affect the recorded pictures.
- This phenomenon also appears when the brightness changes when the camera is zoomed or when the camera is moved. This is because of operation of the automatic aperture of the camera, and it is not a malfunction.

The LCD monitor flickers indoors.

- The LCD monitor may flicker for a few seconds after turning the camera on indoors under fluorescent light. This is not a malfunction.

The LCD monitor is too bright or dark.

- [POWER LCD] is activated. (P25)

Black, red, blue and green dots appear on the LCD monitor.

- This is not a malfunction.
  These pixels do not affect the recorded pictures.

Noise appears on the LCD monitor.

- In dark places, noise may appear to maintain the brightness of the LCD monitor. This does not affect the pictures you are recording.

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Flash

The flash is not activated.

- Is the flash setting set to [⚡]?
  → Change the flash setting. (P51)
- Flash Mode is not available when Auto Bracket (P60) or [BURST] (P106) in [REC] Mode menu has been set.

Flash is activated several times.

- The flash is activated twice when Red-Eye Reduction (P52) has been set.
- Has [FLASH BURST] (P71) in Scene Mode been set?

Playback

The picture being played back is rotated and displayed in an unexpected direction.

- [ROTATE DISP.] (P137) is set to [ON].

The picture is not played back.
There are no recorded pictures.

- Is the [REC]/[PLAYBACK] selector switch set to [▶]? (P44)
- Is there a picture on the built-in memory or the card?
  → The pictures on the built-in memory appear when a card is not inserted. The picture data on the card appears when a card is inserted.
- Is this a picture whose file name has been changed in the PC? If it is, it cannot be played back by this unit.
- Has [MODE PLAY], [TRAVEL PLAY], [CATEGORY PLAY] or [FAVORITE PLAY] been set for playback?
  → Change to [NORMAL PLAY]. (P44)
- Were the pictures recorded in Clipboard Mode?
  → Playback in Clipboard Mode. (P115)

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The folder number and the file number are displayed as [—] and the screen turns black.

- Is this a non-standard picture, a picture which has been edited using a PC or a picture which was taken by another make of digital camera?
- Did you remove the battery immediately after picture-taking or did you take the picture using a battery with a low remaining charge?
  → Format the data to delete the pictures mentioned above. (P30)
  (Other pictures will be deleted as well and it will not be possible to restore them. Therefore, check well before formatting.)

With a Calendar Search, pictures are displayed on dates differing from the actual dates on which the pictures were taken.

- Is the clock in the camera set properly? (P18)
- When pictures edited using a PC or pictures taken by other equipment are searched, they may be displayed on dates differing from the actual dates on which the pictures were taken.

White round spots like soap bubbles appear on the recorded picture.

- If you take a picture with the flash in a dark place or indoors, white round spots may appear on the picture caused by the flash reflecting of particles of dust in the air. This is not a malfunction.
  A characteristic of this is that the number of round spots and their position differ in every picture.

Red part of the recorded image has changed colour to black.

- When Digital Red-Eye Correction ([ ], [ ], [ ]) is in operation, if you take a picture of a subject with red colour surrounded by a skin tone colour, that red part may be corrected to black by the Digital Red-Eye Correction function.
  → It is recommend to take the picture with Flash Mode set to [ ], [ ] or [ ], or [RED-EYE REMOVAL] on the [REC] Mode menu set to [OFF]. (P111)

[THUMBNAIL IS DISPLAYED] appears on the screen.

- Is it a picture that has been recorded with other equipment? In such cases, these pictures may be displayed with a deteriorated picture quality.

The sound of the recorded motion pictures sometimes breaks up.

- This unit automatically adjusts the aperture during motion picture recording. At such times, the sound may break up. This is not a malfunction.

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TV, PC and printer

The picture does not appear on the television.

- Is the camera connected to the TV correctly?
  → Set the TV input to External Input Mode.
- Output from the [HDMI] socket is not possible when it is connected to the PC or the printer.
  → Connect it only to the TV.

The display areas on the TV screen and the camera's LCD monitor are different.

- Depending on the TV model, the pictures may be extended horizontally or vertically or they may be displayed with their edges cut off.

The motion pictures cannot be played back on a TV.

- Are you trying to play back the motion pictures by directly inserting the card in the card slot of the TV?
  → Connect the camera to the TV with the AV cable (supplied), or with the HDMI mini cable (optional), and then play back the motion pictures on the camera. (P144, 145)
  → Motion pictures recorded in [AVCHD Lite] can be played back on Panasonic televisions (VIERA) with the AVCHD logo.

The picture is not displayed fully on the TV.

→ Check [TV ASPECT] setting. (P28)

VIERA Link does not work.

- Is it connected properly with the HDMI mini cable (optional)? (P145)
  → Confirm that the HDMI mini-cable (optional) is firmly fitted.
- Is the [VIERA Link] on this unit set to [ON]? (P29)
  → Depending on HDMI terminal of the TV, the input channel may not switch automatically. In this case, use the remote control for the TV to switch input. (For details on how to switch input, please read the operating instructions for the TV.)
  → Check the VIERA Link setting on the connected device.
  → Turn the power to the unit off and then back on again.
  → Set [VIERA Link] to [Off] on the TV and then turn it back to [On]. (Refer to the operating instructions of the TV for details.)
  → Check [VIDEO OUT] setting. (P28)

The picture cannot be transferred when the camera is connected to a PC.

- Is the camera connected to the PC correctly?
- Is the camera recognised by the PC correctly?
  → Set to [PC] in [USB MODE]. (P28, 154)

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The card is not recognised by the PC. (The built-in memory is recognised.)

→ Disconnect the USB connection cable. Connect it again while the card is inserted in the camera.

• When the mode dial is set to [], contents of the built-in memory will be displayed.
→ Set the mode dial to anything except [].

The card is not recognised by the PC. (SDXC memory card is used)

→ Check if your PC is compatible with SDXC memory cards.
http://panasonic.net/avc/sdcard/information/SDXC.html
→ A message prompting to format the card may be displayed when connecting, but do not format.
→ If the [ACCESS] displayed on the LCD monitor does not disappear, disconnect the USB connection cable after turning off the power.

The picture cannot be printed when the camera is connected to a printer.

• Pictures cannot be printed using a printer which does not support PictBridge.
→ Set to [PictBridge(PTP)] in [USB MODE]. (P28, 157)

The ends of the pictures are cut at printing.

→ When using a printer with a Cropping or borderless printing function, cancel this function before printing. (For details, refer to the operating instructions for the printer.)
→ When you order photo studios to print pictures, ask the photo studio if the pictures can be printed with both ends.

Others

An unreadable language was selected by mistake.

→ Press [MENU/SET], select the [SETUP] menu icon [] and then select the [] icon to set the desired language. (P30)

A red lamp sometimes turns on when the shutter button is pressed halfway.

• In dark places, the AF Assist Lamp (P111) lights red to make it easier to focus on a subject.

The AF Assist Lamp does not turn on.

• Is [AF ASSIST LAMP] on the [REC] Mode menu set to [ON]? (P111)
• The AF Assist Lamp does not turn on in bright places.

The camera becomes warm.

• The surface of the camera may become warm during use. This does not affect the performance or quality of the camera.

The lens clicks.

• When the brightness changes due to zoom or camera movement etc., the lens may click and the picture on the screen may drastically change. However, the picture is not affected. The sound is caused by the automatic adjustment of the aperture. This is not a malfunction.

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The clock is reset.

- If you do not use the camera for a long time, the clock may be reset.
  → [PLEASE SET THE CLOCK] message will be displayed; please re-set the clock. When taking pictures, it will not be possible to record the correct date without setting the clock. (P18)

When pictures are taken using the zoom, they are slightly distorted and the areas around the subject contain colours which are not actually present.

- It is possible that the subject may be warped slightly, or the borders get coloured, depending on the zoom magnification, due to the characteristics of the lens, but this is not a malfunction.

Zooming stops instantaneously.

- When using the Extra Optical Zoom or the Intelligent Zoom, the zooming action will stop temporarily. This is not a malfunction.

Zoom does not go up to maximum magnification.

- Is the camera set to Macro Zoom Mode? (P57)
  Maximum zoom during Macro Zoom Mode is 3× Digital Zoom.

The file numbers are not recorded consecutively.

- When you perform an operation after taking a certain action, the pictures may be recorded in folders with different numbers from the ones used prior to the operation. (P156)

The file numbers are recorded in ascending order.

- If the battery was inserted or removed without first turning the camera's power off, the folder and file numbers for the pictures taken will not be stored in the memory. When the power is then turned back on and pictures are taken, they may be stored under file numbers which should have been assigned to previous pictures.

[AGE] is not displayed correctly.

- Check the clock (P18) and birthday settings (P68).

The lens barrel is retracted.

- The lens barrel retracts about 15 seconds after switching from [REC] Mode to [PLAYBACK] Mode.

When the camera is left alone, the slide show is suddenly displayed.

- This is the [AUTO DEMO] to introduce the features of the camera. Press a button to return the camera to the original screen.

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Number of Recordable Pictures and Available Recording Time

- The number of recordable pictures and the available recording time are an approximation. (These vary depending on the recording conditions and the type of card.)
- The number of recordable pictures and the available recording time varies depending on the subjects.

■ Number of recordable pictures

Aspect ratio		4:3							
Picture size		14M		10M (EZ)		7M (EZ)		5M (EZ)	
Quality									
Built-in Memory (Approx. 40 MB)		7	10	9	14	11	19	14	25
Card	256 MB	41	61	55	82	68	105	80	140
	512 MB	83	120	110	160	135	210	155	280
	1 GB	165	240	220	320	270	430	320	560
	2 GB	340	490	450	660	550	870	650	1130
	4 GB	660	980	880	1310	1090	1720	1280	2230
	6 GB	1010	1490	1340	1990	1660	2620	1950	3390
	8 GB	1360	1990	1800	2660	2230	3500	2610	4540
	12 GB	2050	3010	2720	4020	3360	5290	3940	6860
	16 GB	2740	4010	3630	5370	4490	7050	5250	9150
	24 GB	3980	5830	5270	7790	6520	10250	7630	13280
	32 GB	5500	8050	7280	10770	9010	14160	10540	18350
	48 GB	8090	11740	10710	15830	13000	20230	15170	26010
	64 GB	10980	15940	14530	21490	17650	27460	20590	35300

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Aspect ratio		4:3			
Picture size		3M (EZ)		0.3M (EZ)	
Quality					
Built-in Memory (Approx. 40 MB)		27	53	195	310
Card	256 MB	150	290	1080	1690
	512 MB	300	580	2150	3350
	1 GB	600	1160	4310	6710
	2 GB	1220	2360	8770	12290
	4 GB	2410	4640	17240	24130
	6 GB	3660	7050	26210	36700
	8 GB	4910	9440	35080	49120
	12 GB	7400	14240	52920	74090
	16 GB	9880	19000	70590	98830
	24 GB	14350	27590	102500	143510
	32 GB	19820	38120	141620	198260
	48 GB	28020	52030	182130	182130
	64 GB	38020	70610	247150	247150

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Aspect ratio		3:2							
Picture size		12.5M		9M (EZ)		6M (EZ)		4.5M (EZ)	
Quality		★★★	★★	★★★	★★	★★★	★★	★★★	★★
Built-in Memory (Approx. 40 MB)		7	11	10	15	12	20	21	38
Card	256 MB	45	66	59	88	69	115	115	210
	512 MB	90	130	115	175	135	220	230	420
	1 GB	180	260	230	350	270	460	470	850
	2 GB	360	540	480	720	560	930	950	1700
	4 GB	720	1060	940	1410	1100	1820	1880	3350
	6 GB	1100	1620	1440	2150	1680	2770	2860	5090
	8 GB	1470	2170	1930	2880	2250	3720	3830	6820
	12 GB	2230	3270	2910	4350	3390	5610	5780	10290
	16 GB	2970	4370	3890	5810	4530	7480	7720	13720
	24 GB	4320	6340	5640	8440	6580	10870	11210	19930
	32 GB	5970	8770	7800	11660	9090	15010	15480	27530
	48 GB	8670	12560	11380	16550	13000	21420	22760	40470
	64 GB	11760	17040	15440	22460	17650	29070	30890	54920

Aspect ratio		3:2			
Picture size		2.5M (EZ)		0.3M (EZ)	
Quality		★★★	★★	★★★	★★
Built-in Memory (Approx. 40 MB)		30	58	210	310
Card	256 MB	170	320	1170	1690
	512 MB	330	640	2320	3350
	1 GB	670	1280	4640	6710
	2 GB	1360	2560	8770	12290
	4 GB	2680	5020	17240	24130
	6 GB	4070	7640	26210	36700
	8 GB	5450	10230	35080	49120
	12 GB	8230	15430	52920	74090
	16 GB	10980	20590	70590	98830
	24 GB	15940	29890	102500	143510
	32 GB	22020	41300	141620	198260
	48 GB	30350	60710	182130	182130
	64 GB	41190	82380	247150	247150

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Aspect ratio		16:9							
Picture size		10.5M		7.5M (EZ)		5.5M (EZ)		3.5M (EZ)	
Quality		★★★	★★	★★★	★★	★★★	★★	★★★	★★
Built-in Memory (Approx. 40 MB)		8	13	10	17	12	22	24	45
Card	256 MB	50	75	62	98	71	125	135	240
	512 MB	100	150	120	195	140	240	260	490
	1 GB	200	300	250	390	280	490	530	990
	2 GB	400	610	500	790	570	1000	1090	1980
	4 GB	800	1200	990	1560	1130	1970	2150	3890
	6 GB	1220	1830	1510	2380	1730	3000	3270	5910
	8 GB	1630	2450	2020	3180	2310	4020	4380	7920
	12 GB	2460	3700	3060	4810	3490	6070	6610	11950
	16 GB	3290	4940	4080	6410	4660	8100	8820	15940
	24 GB	4780	7170	5920	9310	6760	11760	12810	23140
	32 GB	6600	9910	8190	12870	9350	16250	17700	31970
	48 GB	9580	14570	11740	18210	13490	22760	26010	45530
	64 GB	13000	19770	15940	24710	18300	30890	35300	61780

Aspect ratio		16:9			
Picture size		2M (EZ)		0.2M (EZ)	
Quality		★★★	★★	★★★	★★
Built-in Memory (Approx. 40 MB)		40	77	250	340
Card	256 MB	220	420	1380	1900
	512 MB	440	830	2740	3770
	1 GB	880	1670	5490	7550
	2 GB	1800	3410	10240	15360
	4 GB	3540	6700	20110	30170
	6 GB	5390	10190	30580	45870
	8 GB	7220	13640	40930	61400
	12 GB	10890	20580	61740	92610
	16 GB	14530	27450	82360	123540
	24 GB	21100	39860	119590	179380
	32 GB	29150	55070	165220	247830
	48 GB	40470	72850	182130	364270
	64 GB	54920	98860	247150	494310

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■ Available recording time (when recording motion pictures)

File format		[AVCHD Lite]			[MOTION JPEG]			
Picture quality setting		FSH	FHI	FL	HD	WVGA	VGA	QVGA
Built-in Memory (Approx. 40 MB)		Cannot be used.						1 min 24 s
Card	256 MB	Cannot be guaranteed in operation.			59 s	2 min 35 s	2 min 40 s	7 min 50 s
	512 MB	3 min 00 s	4 min 00 s	7 min 00 s	2 min 00 s	5 min 10 s	5 min 20 s	15 min 40 s
	1 GB	7 min 00 s	9 min 00 s	14 min 00 s	4 min 00 s	10 min 20 s	10 min 50 s	31 min 20 s
	2 GB	15 min 00 s	20 min 00 s	29 min 00 s	8 min 20 s	21 min 20 s	22 min 10 s	1 h 3 min
	4 GB	30 min 00 s	40 min 00 s	1 h 00 min	16 min 30 s	41 min 50 s	43 min 40 s	2 h 5 min
	6 GB	46 min 00 s	1 h 00 min	1 h 28 min	25 min 10 s	1 h 3 min	1 h 6 min	3 h 11 min
	8 GB	1 h 00 min	1 h 20 min	1 h 54 min	33 min 40 s	1 h 25 min	1 h 28 min	4 h 15 min
	12 GB	1 h 34 min	2 h 00 min	2 h 54 min	50 min 50 s	2 h 8 min	2 h 14 min	6 h 26 min
	16 GB	2 h 00 min	2 h 40 min	4 h 00 min	1 h 8 min	2 h 52 min	2 h 59 min	8 h 35 min
	24 GB	3 h 00 min	4 h 00 min	6 h 00 min	1 h 38 min	4 h 9 min	4 h 19 min	12 h 27 min
	32 GB	4 h 00 min	5 h 20 min	8 h 00 min	2 h 16 min	5 h 45 min	5 h 59 min	17 h 13 min
	48 GB	6 h 00 min	8 h 00 min	12 h 00 min	3 h 20 min	8 h 27 min	8 h 47 min	25 h 18 min
	64 GB	8 h 00 min	10 h 40 min	16 h 00 min	4 h 32 min	11 h 28 min	11 h 56 min	34 h 21 min

- Motion pictures can be recorded continuously for up to 29 minutes 59 seconds. Also, motion picture recorded continuously in [MOTION JPEG] is up to 2 GB. (Example: [8m 20s] with [FHD])
  Remaining time for continuous recording is displayed on the screen.

Note

- The number of recordable pictures and the available recording time displayed on the screen may not decrease in order.
- The Extra Optical Zoom does not work when [MACRO ZOOM] is set or in [TRANSFORM], [HIGH SENS.], [HI-SPEED BURST], [FLASH BURST], [PIN HOLE] and [PHOTO FRAME] in Scene Mode so the picture size for [EZ] is not displayed.

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